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INDIA WEATHER REVIEW, 1963

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Monthly Weather Report

January

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National Oceanic & Atmospheric Administration
U.S. Dept. of Commerce

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E. S. S. A.
U. S. Dept. of Commerce

Chief features :

- (i) Fairly good rainfall activity in the south Peninsula;
- (ii) Development of a depression in the southwest Bay of Bengal in the first week; and
- (iii) Scanty precipitation in northwest India due to absence of western disturbances.

Mainly dry weather prevailed over the country in the beginning of the month. However, the seasonal trough in the south Bay of Bengal was active and a depression developed over the southwest Bay of Bengal on 3rd morning with centre near Lat. 5.5°N and Long. 85°E . It remained practically stationary till 6th and later weakened into a low pressure area and moved slowly westwards to Laccadive-Maldiva areas by 9th. Thereafter, it persisted till 13th as a trough extending northwards up to Gujarat State. Under the influence of this system well distributed rainfall occurred in the south Bay Islands during the first week and in the south Peninsula during the period 5th to 13th with a few heavy falls. Palayankottai recorded an exceptionally heavy fall of 29 cm of rain on 9th. Some of the other noteworthy amounts of rainfall recorded were: Nan Cowrie 15 cm on 6th, Nagapattinam 10 cm and Adirampattinam and Kodaikanal 7 cm each on 8th, Alleppey 9 cm and Tiruchchirappalli 8 cm on 9th and Madras 8 cm on 10th.

A well marked cyclonic circulation in the low levels developed over Gujarat Region and neighbouring areas on 13th. Moving eastwards, it weakened after 15th and passed off across Assam by 17th. It caused light showers in Gujarat State on 14th. The rainfall belt extended progressively to Madhya Pradesh, Uttar Pradesh and Bihar State. Mainpuri recorded 6 cm of rain on 15th. The Western Himalayas also received moderate snowfall on 15th and 16th. Nainital recorded 5 cm of rain on 16th.

Mainly dry weather prevailed over the country during the latter half of the month, except for a spell of rain in the extreme south Peninsula during the last week. This was caused by two troughs in the easterlies moving across the extreme south Peninsula and adjoining sea areas during the period 25th to 28th.

Night temperatures were above normal in the south Peninsula from 5th and over the entire Peninsula from 10th and remained so up to 16th. They were also above normal in the central parts of the country from 13th to 16th and generally below normal during the remaining days, being appreciably to markedly so on a number of days in the third week. Night temperatures over most parts of north India remained below normal during the month and were appreciably to markedly so in northwest India during the first and third weeks.

The rainfall for the month was in large excess in the Bay Islands, Gujarat Region, the Madras State, Kerala and the Arabian Sea Islands and normal in east Uttar Pradesh. It was in slight defect in Saurashtra and Kutch and south Interior Mysore, in moderate defect in west Uttar Pradesh and west Madhya Pradesh and in large defect in Assam, Gangetic West Bengal, Bihar State, the Punjab (I), east Rajasthan, east Madhya Pradesh, the Konkan, Vidarbha, coastal Andhra Pradesh and north Interior Mysore. There was no rain over the rest of the country outside Himachal Pradesh.

Mean maximum temperature was above normal in the Punjab(I), west Rajasthan, Gujarat State, the Konkan and coastal Mysore and below normal in Orissa, Jammu and Kashmir, Telangana, Rayalaseema and Interior Mysore. It was normal over the rest of the country outside Himachal Pradesh. Mean minimum temperature was above normal in the Bay Islands, Gujarat Region, the Konkan and coastal Mysore and normal in Assam, Sub-Himalayan West Bengal, Saurashtra and Kutch, Madhya Maharashtra, Marathwada, coastal Andhra Pradesh, Rayalaseema, the Madras State, Interior Mysore, Kerala and the Arabian Sea Islands. It was in large defect over the rest of the country outside Himachal Pradesh.

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Rocket Center, West Virginia
September 14, 1999

Mean relative humidity in the morning was above normal in north Interior Mysore and the Arabian Sea Islands and below normal in Assam, Gangetic West Bengal, Orissa, Bihar Plateau, Jammu and Kashmir, west Rajasthan, Madhya Pradesh, Gujarat Region, coastal Andhra Pradesh and north Mysore. It was normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was above normal in the Bay Islands, Maharashtra State, Rayalaseema, the Madras State, coastal and north Interior Mysore, Kerala and the Arabian Sea Islands and normal in Orissa, east Madhya Pradesh and Telangana. It was below normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. IST of the date noted in the succeeding column. Similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hours IST of the date given in the succeeding column.

POONA 5;
The 22nd March, 1963.

R. ANANTHAKRISHNAN,
for DIRECTOR GENERAL OF OBSERVATORIES.

Errata to M.W.R. for the quarter January to March 1963.

Page Station Hour Column For Read
No. -----

January 1963

Table I - Division

3	1. Assam (including Manipur, Tripura)	2	0.5	5.0
3	7. Jammu and Kashmir	5	5.2	-5.2

Table I - Sub-division

3	23. Coastal Andhra Pradesh	2	+8.3	-8.3
3	31. Arabian Sea Islands	9	+4.8	4.8

Table II

4	Port Blair	12	-25.4	+25.4
4	Berhampore	7	-12	-1.2
5	Jharsuguda	4	35.7	30.7
5	Angul	4	29.7	29.8
6	Aligarh	3	..	0
6	Ambala	21	(Blank)	0
7	Srinagar	20(b)	3	0
7	Nagaur	5	27,31	27,29,31
7	Sheopur	9	6,2	6,20
8	Ambikapur	10	(Blank)	0
8	Radhanpur	17	9.7	7.9
8	Broach	9	16,7	16,17
9	Pusad	20(a)	1	0
9	Rentachintala	16	..	0
10	Cuddapah	11	..	0
10	Madras (Minambakkam)	12	9.9	90.9
10	Coimbatore (Pilamedu)	24	1	0
10	Tondi	17	10.1	18.1
10	Bellary	1	(not clear)	Bellary
10	Chitradurga	18	8.6	8.7
10	Footnote	-	(h) Mean of 29 day	(b) Mean of 29 days
11	Calicut	7	+1.7	+0.7
11	Fort Cochin	10	(not clear)	5.7
11	Cochin (Naval Air Station)	28	3	0
11	Alleppey	4	36.3	33.3
11	Trivandrum (Aerodrome)	1	Trivandrum (Aerodrome)	Trivandrum (Aerodrome) (R)
11	Lokpal	2	4.4	-4.4
11	Hazari bagh	20(b)	4	1
12	Walungchung Gola	6	4.3	-4.3
12	Angbung	1	Angbung	Angbung (R)
12	Footnote	-	(not given)	(a) Mean of 30 days

Table III

13	North Lakhimpur	0830	14	-1.8	-1.5
14	Luding	0830	14	..	0
14	Luding	1730	14	0	..
15	Calcutta (Dum Dum)	0230	3	7	6
16	Sambalpur	1730	13	1.0	0.1
16	Dhanbad	0830	4	1018.8	1018.0
16	Ranchi Aerodrome	1130	28	0	1
17	Chai basa	1730	4	1013.4	1013.5
17	Purnea	1730	7	10.8	19.8
17	Lucknow (Amausi)	1130	23	1	0
17	Lucknow (Amausi)	2330	26	(Blank)	3

Page No.	Station	Hour	Column	For	Read
Table III contd.					
18	Banda	0830	4	1016.8	1019.8
18	Allahabad (Bamhauri)	0530	4	1019.9	1016.9
18	Varanasi (Babatpur)	1730	10	10.6	11.6
18	Dehra Dun	0830	7	8.8	8.6
18	Roorkee	0830	26	(Blank)	6
18	Najibabad	0830	7	5.5	5.9
18	Najibabad	1730	21	(Blank)	0
19	Amritsar (Rajasansi)	1730	28	(Blank)	0
19	Ambala (Aerodrome)	1130	28	1	0
20	Hissar	0530	1	(After station Ka. nal)	Hissar
20	Banihal	1730	9	7.4	-7.4
21	Mahajan	0830	9	2.4	-2.4
21	Churu	1730	4	1055.5	1015.5
21	Bikaner P.B.O.	2330	9	1.4	-1.4
21	Nagaur	0830	5	983.3	983.9
22	Guna	1130	17	2	1
22	Guna	1730	21	8	9
22	Bhopal (Bairagarh)	1730	10	8.6	8.4
23	Sidhi	0830	3	"	..
23	Sidhi	1730	3	"	..
23	Champa	1730	9	14.5	4.5
24	Ahmedabad	1730	4	1002.6	1012.6
24	Ahmedabad	1730	27	3	0
24	Dohad	1730	5	974.0	974.9
24	Kandla Aerodrome	0830	10	6.7	6.9
24	Footnote	-	-	(Not given)	(a) Mean of 30 days.
25	Bhavnagar Aerodrome	0830	1	Bhavnagar Aerodrome	Bhavnagar Aerodrome
25	Dahanu	0830	6	-0.1	-0.6
26	Poona (Aerodrome)	1130	15	18.5	12.5
26	Poona	0830	8	12.2	12.3
26	Baramati	1730	7	28.1	28.6
26	Sholapur	0530	8	11.2	13.2
26	Bir	1730	8	10.8	18.0
27	Akola Aerodrome	1130	23	0	2
27	Yeotmal	0830	21	1	14
27	Sironcha	0830	14	+0.	+0.1
27	Visakhapatnam	1130	9	16.1	14.1
27	Visakhapatnam	1130	10	14.1	16.1
27	Gannavaram	0230	5	1010.8	1010.9
27	Nagarjunakonda	0830	3	"	..
28	Hyderabad (Begampet)	1130	9	11.1	11.8
28	Vellore	1730	5	989.7	987.1
28	Vellore	2330	5	987.1	989.7
29	Vedaranniyam	1730	21	0	1
29	Madurai Aerodrome	0530	27	0	3
31	Mussoorie	0830	4	1490.2	1490.2 (m)
31	Mussoorie	1730	5	794.8	794.8 (m)
32	Pokhara	0830	11	58	71
32	Pokhara	1730	27	2	21
33	Barabakhetta	1730	11	13.7	13.1
33	Gangtok	0830	4	1523.3	1523.8
33	Footnote	-	-	*Data not reliable	† Data not reliable.

Page No.	Station	Time in I.S.T.	Height in Km.	Entry under column	Existing entry	Correct entry
35	Raxaul	0530	-	Time	0530	0630
36	Apartala	1730	0.3	n	3	31
36	Agartala	2330	1.5	v	-	2.9
36	Agartala	2330	2.1	v	-	6.9
36	Allahabad	1730	9.0	v	31.0	37.0
38	Bangalore	0530	-	time	0530*	0530
38	Bangalore	1730	-	t time	1730*	1730
39	Bhopal	0530	0.9	v	2.3	2.1
40	Bombay	0530*	0.3	V	4.7	4.9
42	Gauhati	0530*	Surf.	D	224	225
42	Gauhati	0530*	0.15	n	31	30
42	Gauhati	0530*	9.0	v	43.5	43.4
42	Gauhati	1130	9.0	D	265	275
42	Gauhati	1730	9.0	v	42.2	45.2
42	Gaya	1730	0.3	v	3.0	4.0
42	Gaya	1730	0.9	V	4.5	4.7
42	Gaya	1730	3.6	D	282	292
42	Gopalpur	1730	6.0	v	12.5	13.5
44	Jagdalpur	2330	3.6	D	392	292
44	Jharsuguda	1730	6.0	V	20.3	19.8
46	New Delhi	0530*	9.0	V	33.7	33.1
46	New Delhi	1130	9.0	V	10.6	10.5
46	New Delhi	2330	3.0	D	289	288
46	Trivandrum	1730*	7.2	n	01	31
51	Ambala	1730	-	Time	1130	1730
51	Jodhpur	1730*	12.0	v	47.3	43.6
54	Bombay	00Z	900 mb	Min	0	290
57	Allahabad	12Z	150 mb	Max	213	218
57	Bombay	12Z	175 mb	Ht. gpm	13263	13268
57	Calcutta	12Z	800 mb	Mean	281.6	284.6
59	Vishakhapatnam	12Z	700 mb	Max	285	293

February 1963

Page No.	Station	Hour	Column	For	Read
Table II					
67	Guna		16	+0.6	-0.6
67	Betul		3	-0.8	+0.8
67	Betul		5	+22	22
67	Champa		16	+1.2	-1.2
68	Khandala		9	3,9	delete
68	Miraj		9	0	7,16,21
68	Miraj		22	(Blank)	1
68	Bir		1	(Blank)	Bir
68	Bir		15	(Blank)	1
68	Footnote		-	(a) Mean of 27 days	(d) Mean of 27 days
69	Nagpur (Sonapan)		28	2	3
69	Akola (Aerodrome)		17	17	10.7
69	Buldana		25	(Blank)	2
69	Bhadrachalam		2	34.4	34.0
69	Nandyal		17	7.2	8.2
69	Nagapattinam		16	1.0	-1.0
70	Gulbarga		5	10,25	16,25

Page No.	Station	Hour	Column	For	Read
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Table II contd.

70	Calicut		18	8.4	8.0
71	Cherrapunji		16	3.5	-3.5
71	Cherrapunji		17	4.7	4.7(d)
71	Katmandu		26	9	0

Table III

73	Jorhat (Aerodrome)	0830	17	0	1
73	Jorhat (Aerodrome)	1130	1	(R)	delete
73	Tangla	0830	20	9	0
73	Rangia	1730	21	..	4
75	Krishnanagar	0830	5	1005.0	1015.0
75	Bankura	0830	5	1014.9	1004.7
76	Bolangir	0830	13	0.6	0.9
76	Bolangir	1730	7	29.	29.7
78	Azamgarh	1730	10	15.9	15.5
78	* Dehra Dun	0830	12	6	-6
78	Dehra Dun	1730	10	0.1	10.1
78	Agra	1730	28	(Blank)	0
79	Agra (Aerodrome)	1730	18	21	22
79	Bhatinda	1730	17	1	0.
79	Delhi (Safdarjung)	0830	22	(Blank)	2
80	Palam (Aerodrome)	0830	4	1010.4	1016.4
80	Palam (Aerodrome)	0830	5	959.0	989.0
80	Bilaspur	1730	4	1010.4	1018.4
81	Bhopalpur	1730	16	Blank	0
81	Bhampa	0830	4	1010.3	1016.3
83	Raipur	1130	28	0	1
83	Jagdalsur	0830	19	3	2
83	Jagdalsur	0830	28	6	0
84	Bhuj (Rudramata)	0830	2	0330	0830
84	Jainagar (Aerodrome)	1130	3	138	"
84	Bhaunagar (Aerodrome)	0830	6	+0.7	+0.1
84	Veraval	0830	6	Blank	-0.4
84	Veraval	1130	6	-0.4	delete
85	Mailegaon	0830	19	(Blank)	0
86	Buldana	1730	17	0	1
86	Yeotmal	0830	17	0	1
86	Pusad	0830	17	0	1
86	Nidadavole	0830	2	0330	0830
87	Kurnool	1730	23	(Blank)	0
88	Mettur Dam R.S.	0830	3	"	..
88	Mettur Dam R.S.	1730	3	"	..
88	Madurai Aerodrome	0530	2	030	0530
88	Honavar	0830	4	1313.5	1013.5
90	Simla	0830	11	35	31
92	Butwal	1730	1	*	delete
92	Gezing	0830	3	"	..
92	Gezing	1730	3	"	..

- 94
- 1.Heading for last column : Read flight for flight
 - 2.Column for Station : Read Bangalore for Bangalore
 - 3.Last column for Bhagalpur : Read 0630 and 1630 for 0530 and 1730 respectively
 - 4.Darjeeling : Delete 2330 from the last column
 - 5.Raxaul : Read 0630 and 1630 for 0530 and 1730 respectively in the last column
 6. Column for station : Read Tiruchchirappalli for Tiruchirappalli.

Upper Wind Data

Page No.	Station	Time in I.S.T.	Height in km.	Entry under column	Existing entry	Correct entry
95	Ahmadabad	2330	3.0	n	26	28
96	Ambala	0530	7.2	v	12.3	12.0
97	Bangalore	Time of flights			0530*	0530@
					1730*	1730@
98	Bhopal/Bairagarh	0530	5.4	D	282	287
99	Bikaner	1730	7.2	D	257	256
99	Bombay/Santacruz	0530*	0.9	v	3.2	3.3
		1730*	1.5	v	3.7	3.9
101	Gopalpur	0530	0.15	v	1.7	1.8
102	Imphal/Tulihal	1130	3.6	n	20	17
102	Jabalpur (all hours) and Jagdalpur 0530 :					
	Data from 0.6 km. level onwards shifted to next level					
102	Jabalpur	0530	6.0	D	069	269
103	Jharsuguda	1730	3.6	V	16.6	10.7
			9.0	V and v	46.6, 31.7	33.9, 31.8
104	Lucknow/Amausi	0530	3.6	v and D	7.9, 277	10.1, 276
104	Mangalore/Bajpe	2330	3.6	V	5.5	5.1
106	Poona	2330	4.5	D	156	256
106	Raipur	0530	5.4	v	11.5	11.9
105	Siliguri/Baghdogra	0530	0.3	D	068	067
110	Jodhpur	0530*	16.2	v	29.	29.0
111	Port Blair	0530*	14.1	v	2.0	7.0

Radio-sonde Data

- 112 Column for Name of Station : Read Bombay/Santacruz for Bombay/Santa
- 113 3rd line : Read (A) instead of (B)
- 114 4th line : Read 'Magha 12' instead of 'Magh 1'
- 115 4th line : Read 'Magha 12' instead of 'Magha'
- 115 Surface pressure for Vishakhapatnam : Read 1009 instead of 109.

Station	level	Column	Wrong entry	Correct entry
Vishakhapatnam	125	H gpm.	15259	15219
	60	"	15490	19450
Station	level	Element	Wrong entry	Correct entry
115 Gauhati	600	Mean temperature	270.2	270.0
117 Nagpur/Sonegaon	200	H gpm.	12219	12291

Page No.	Station	Hour	Column	For	Read
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March 1963

Table II

122	Port Blair	28	1	0
123	Bhubaneshwar	11	9.9	19.9
123	Motihari	11	1.3	1.3(c)
123	Forbesganj	11	12.8(c)	12.8
123	Gaya	6	(not clear)	16.2
124	Orai	1	Orai(R)	Orai
124	Chandigarh	1	(not clear)	13.1
124	Bikaner	1	Bikane	Bikaner
125	Dohad	5	9.0	19.0

Type No.	Station	Hour	Column	For	Read
Table II (contd).					
125	Surat		19	+0.3	+3.0
126	Bhutakia Bhimasar		1	Bhutakia Bhimasar	Bhutakia Bhimasar
126	New Kandla		2	35.2	32.2
126	Surendranagar		12	0	-8.0
126	Rajkot		19	-1.4	+1.4
126	Bhaunagar Aerodrome		19	-4.1	+4.1
126	Mahuva		20(a)	0	..
			20(b)	0	..
126	Dahanu		7	+0.1	+1.0
126	Alibag		10	6	..
126	Devgarh		2	30.2	30.9
126	Nandurbar		5	8, 15, 23	8, 15, 23
126	Jalgaon		19	-2.2	+2.2
126	Ahmadnagar		3	-0.5	+0.5
126	Aurangabad		20(a)	1	0
126	Buldana		5	5	5 days
126	Footnote		-	(not given)	(b) Total or Mean of 29 days
126	Footnote		-	(not given)	(d) Mean or observations for 27 days
127	Nidadavole		14	0	27
127	Ongole		14	27	..
127	Nellore		16	+0.3	+0.3
127	Ramagundam		3	+0.9	-0.9
127	Nandyal		1	Nandyal(R)	(delete)
127	Madras (Minambakkam)		5	1, 14	13, 14
127	Bidar		17	13, 3(a)	13.3
127	Gulbarga		17	12.6	12.6(a)
128	Trivandrum		9	8, 21	8, 20
128	Dharmasala		4	4.5	24.5
128	Nainital		22	(blank)	0
	Footnote		-	(not clear)	*Data given as addenda in December 1965 issue
128	Footnote		-	(b) Mean of 20 days	(b) Mean of 29 days
129	Bagra Tawa		5	28, 24, 31	23, 24, 31

Table III

130	Port Blair	1130	7	39.9	30.9
130	Digboi	1730	3	..	"
130	Jorhat (Aerodrome)	1130	7	8.8	18.8
131	Dhubri (Rupsi)	0530	9	13.9	13.0
131	Kailashahar	0830	5	1000.5	1010.5
131	Jalpaiguri	1730	9	12.0	12.9
131	Balurghat	0830	28	3	1
131	Malda	0830	28	1	0
131	Suri	0830	27	3	2
132	(Heading)	-	1	(not clear)	Sub-division and Station
132	Krishnanagar	1730	5	1106.4	1006.4
132	Angul	0830	14	..	0
132	Angul	1730	"	0.0	..
133	Bihar Plains	-	1	Bihar Plains-	Bihar Plains
136	Hissar	0830	6	-0.0	0
136	New Delhi (Safdarjung)	1130	15	14.4	14.6

Station	Hour	Column	For	Read
Part III contd.				
Gulmarg	1730	1	(P)	Blank
Gulmarg	1730	-	Blank	Closed during winter months
Mahajan	1730	5	986.4	986.3
Erinpura (Jawai Dam)	Read the Data after Baimer			
Mandla	1730	4	1007.6	1007.0
Champa	0830	4	1007.0	1013.1
Champa	1730	4	1013.1	1007.6
Raigarh	1730	4	1007.5	1007.4
Kanker	0830	14	+0.4	-0.4
Surat	1130	27	Blank	0
Surat	1730	27	Blank	0
Naliya	1730	26	Blank	3
Harnai	0830	6	- . .	0
Harnai	1730	15	9.6	29.6
Devgarh	1730	13	4.9	24.9
Nandurbar	0830	5	988.1	989.1
Aurangabad (Chikhalthan)	2330	8	14.	14.8
Akola	0830	11	39	36
Sironcha	0830	14	-0.1	+0.1
Vishakhapatnam	0530	10	20.0	25.0
Kakinada	0830	14	-2	-0.2
Rangundam	1730	17	0	1
Madras (Minambakkam)	0830	12	not clear	+2
Salem	2330	7	24.4	26.4
Coimbatore	0830	1	not clear	Coimbatore
Coimbatore	0830	17	8	18
Tiruchchirappalli	0830	4	1002.7	1012.7
Tamban	0830	6	0.0	0
Kanniya Kumari	0830	28	Blank	0
Bangalore (Bajpe)	0230	1	Bangalore-(contd.)	Mangalore (Bajpe)
Mangalore	0830	2 to 28	(not printed)	0830, 22, 1011.6, 1009.1, -0.3, 27.7, 24.3, 22.6, 27.6, 74, 0, 4.7, +2.9, 3.0, 0, 0, 31, 4, 5, 18, 3, 0, 0, 0, 1, 0, 0
Belgaum	0830	22	0	1
Belgaum (Samra)	1130	17	3	2
Agumbe	0830	10	2.3	21.3
Cochin (Naval Air Station)	1730	3	3	"
Trivandrum	0530	10	27.5	29.5
Josnimath	1730	2	1730	(R)1730
Mussoorie	0830	1	Mussoorie (R)	Mussoorie
Aou	0830	12	(Blank)	0
Kodaikanal	0830	10	3.4	8.4
Kodaikanal	1730	4	3551.9	3151.9
Dallekh	1730	11	3	43

i) In column for Approximate times of flight (I.S.T.) insert '1130' against the following stations : Agartala, Asansol, Bahraich, Bhagalpur, Bhubaneshwar, Gaya, Jamshedpur, Raxaul, Siliguri/Baghdogra, Trivandrum.

ii) Delete 1130 against Tiruchchirappalli

iii) Delete asterisk (*) against 0530 and 1730 for Tiruchchirappalli.

iv) Add asterisk (*) against 0530 and 1730 for Trivandrum.

Page

- v) Raxaul : Read 0630 and 1630 instead of 0530 and 1730 respectively.
- vi) Add asterisk (*) against 0530 and 1730 for Srinagar.

Upper Wind Data

Page No.	Station	Time in I.S.T.	Height in km.	Entry under column	Existing entry	Correct entry
154	Bangalore	1730@	5.4	v	2.	2.4
156	Bombay/Santacruz	1130	2.1	D	127	233
156	Calcutta/Dum Dum	1130	5.4	V	26.4	15.3
157	Dehra Dum	1730	7.2	n.	20	18
158	Gaya	0530	1.5	V	7.6	7.5
			2.1	D	285	280
			3.0	D	294	285
159	Gwalior	0530	0.15	D	359	338
			0.3	D	279	297
160	Jaipur(/Sanganer	1730	7.2	D	270	277
165	New Delh/Safdarjung	1730*	0.6	D	305	301
		2330	0.6	v	4.5	4.1
165	Fort Blair	0530*	3.6	D	157	117
		1730*	7.2	D	273	213
164	Column for Height in km.	: Last Line			0.6	9.0
167	Bangalore	0530	-	Time	0530	0530@
167	Jagdalpur	0530	-	Time	0530*	0530
168	Minicoy	1730	-	Time	1730	1730*
168	Minicoy	1730	16.2	V	7.1	7.5
168	Nagpur	0530	-	-	0530*	0530*hr.
						contd.
166	Tiruchchirappalli	0530	12.0	D	30	330
168	Vijayawada	0530	-	Time	050	0530
171	Jodhpur	00Z	Surf.	Mean	092.0	292.0
172			Second line of heading		(B)	(A)
173		- do -			(A)	(B)
173		1-do -			00 hr. GMT	12 hr. GM
173	Ahmadabad	12Z	400 mb	Max.	211	261
174	Jodhpur	12Z	200 mb.	Ht. gpm	1322	12322
175	Trivandrum	12Z	850 mb	Mean	792.5	292.5
175	Vishakhapatnam	12Z	400 mb	Min	522	222

TABLE I.—DIVISIONAL AND SUB-DIVISIONAL MEANS—JANUARY, 1963 (PAUSA 11—MAGHA 11, 1884 SAKA)

1	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %				Cloud	1	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %				Cloud
					0830 hrs. I.S.T.		1730 hrs. I.S.T.								0830 hrs. I.S.T.		1730 hrs. I.S.T.		
					6	7	8	9							6	7	8	9	
Division									Division—Contd.										
1. Assam (Including Manipur, Tripura).	0.5 -14.9	25	24.1 +1.0	8.7 -0.4	78 -7	61	1.7 -1.1	1.6	9. Madhya Pradesh	5.4 -9.1	37	25.2 -0.7	8.4 -1.8	60 -6	34	1.6 -0.2	1.6		
2. West Bengal	0.3 -11.3	3	24.8 -0.7	10.8 -1.2	65 -8	52	1.1 -0.5	0.9	10. Gujarat State	2.3 +0.5	128	29.5 +1.3	13.1 +0.5	52 -6	34	0.8 -0.5	0.8		
3. Orissa	0 -10.1	0	26.1 -1.3	12.3 -2.1	63 -10	47	1.5 -0.2	1.4	11. Maharashtra State	0.4 -4.5	8	29.6 +0.1	15.1 +0.1	60 -1	38	2.6 +1.0	2.5		
4. Bihar	4.1 -13.3	24	23.8 -0.3	8.1 -1.8	65 -8	48	1.1 -0.5	1.1	12. Andhra Pradesh	0.3 -6.9	4	28.4 -1.3	16.4 -0.9	73 -1	49	2.1 -0.1	2.3		
5. Uttar Pradesh	19.5 -3.1	86	22.0 -0.5	6.0 -1.9	75 0	49	0.8 -1.2	0.7	13. Madras State	122.7 +89.5	370	28.4 -1.0	20.9 +0.4	79 -1	64	4.3 +1.0	4.6		
6. Punjab (India) (Including Delhi & Himachal Pradesh.)*	0.1 -41.5	0	21.1 +1.1	3.6 -2.5	80 -2	43	0.9 -2.4	0.5	14. Mysore	1.3 -2.4	35	28.9 -0.8	16.8 +0.3	70 +3	42	3.0 +0.2	3.1		
7. Jammu and Kashmir.	0 -100.1	0	6.1 -1.3	5.2 -2.8	58 -13	62	4.7 -1.3	4.5	15. Kerala	43.1 +26.4	258	31.1 -0.1	22.9 +0.6	72 -3	64	3.6 +1.0	4.0		
8. Rajasthan	0.2 -7.4	3	24.3 +1.0	6.1 -1.9	57 -2	27	0.4 -1.5	0.6											
Sub-Division									Sub-Division—Contd.										
1. Bay Islands	70.9 +25.4	156	29.5 +0.5	23.7 +1.7	68 -3	75	4.7 +1.3	5.0	17. Gujarat Region	4.1 +2.1	205	30.9 +1.1	13.4 +1.1	55 -7	29	0.9 -0.4	0.8		
2. Assam (Including Manipur, Tripura)	5.0 -14.9	25	24.1 +1.0	8.7 -0.4	78 -7	61	1.7 -1.1	1.6	18. Saurashtra and Kutch	1.3 -0.3	81	28.6 +1.5	12.8 +0.2	50 -5	38	0.7 -0.5	0.8		
3. Sub - Himalayan, West Bengal	0 -11.8	0	23.2 -0.5	9.1 -0.7	77 -3	60	1.0 -0.5	1.0	19. Konkan	0.7 -1.2	37	30.9 +1.9	19.7 +1.1	66 -2	59	2.3 +0.9	1.9		
4. Gangetic, West Bengal	0.3 -11.2	3	25.3 -0.7	11.3 -1.4	63 -9	50	1.2 -0.5	0.9	20. Madhya Maharashtra.	0 -2.8	0	30.1 -0.2	13.5 +0.3	58 +2	30	2.6 +1.2	2.8		
5. Orissa	0 -10.1	0	26.1 -1.3	12.3 -2.1	63 -10	47	1.5 -0.2	1.4	21. Marathwada	0 -7.1	0	29.1 -0.5	13.5 -0.1	52 +1	29	3.2 +1.6	3.1		
6. Bihar Plateau	3.0 -15.6	16	24.1 -0.5	8.3 -2.1	59 -11	41	1.3 -0.5	1.4	22. Vidarbha	0.6 -9.1	6	28.1 -0.9	12.8 -1.2	59 -3	32	2.6 +0.8	2.3		
7. Bihar Plains	4.7 -11.8	28	23.5 0	8.0 -1.6	71 -5	55	0.9 -0.7	0.8	23. Coastal Andhra Pradesh.	0.7 +8.3	8	28.0 -1.0	17.4 -1.0	71 -7	59	2.0 -0.5	2.2		
8. Uttar Pradesh (East)	20.9 +1.1	106	22.3 -0.7	6.4 -2.0	77 -2	52	1.0 -0.8	0.8	24. Telangana	0 -5.6	0	28.8 -1.1	14.4 -1.2	75 +5	36	2.2 +0.1	1.9		
9. Uttar Pradesh, (West)	17.5 -8.8	67	21.5 -0.2	5.4 -1.9	73 +2	46	0.5 -1.8	0.7	25. Rayalaseema	0 -5.9	0	28.9 -2.1	17.5 0	75 +4	48	2.4 +0.6	3.2		
10. Punjab (India) (Including Delhi).	0.1 -41.5	0	21.1 +1.1	3.6 -2.5	80 -2	43	0.9 -2.4	0.5	26. Madras State	122.7 +89.5	370	28.4 -1.0	20.9 +0.4	79 -1	64	4.3 +1.0	4.6		
11. Himachal Pradesh	18.0 ..	..	20.1 ..	3.1 ..	97 ..	49	3.3 ..	0.3	27. Coastal Mysore	0 -2.6	0	32.7 +1.4	21.2 +1.1	65 -6	54	2.9 +0.8	2.8	
12. Jammu and Kashmir	0 -100.1	0	6.1 -1.3	5.2 -2.8	58 -13	62	4.7 -1.3	4.5	28. Interior Mysore, North	0.1 -4.3	2	28.8 -1.2	16.1 0	68 +7	38	2.6 +1.0	2.7		
13. Rajasthan, (West).	0 -7.3	0	24.2 +1.9	5.1 -1.7	55 -10	23	0.3 -1.9	0.5	29. Interior Mysore, South	2.8 -0.7	80	27.4 -1.5	15.6 +0.3	75 +4	41	3.5 -1.0	3.5		
14. Rajasthan, (East).	0.3 -7.4	4	24.5 +0.4	6.8 -2.0	58 +2	30	0.5 -1.3	0.6	30. Kerala	43.1 +26.4	258	31.1 -0.1	22.9 +0.6	72 -3	64	3.6 +1.0	4.0		
15. Madhya Pradesh, (West)	8.0 -3.1	72	25.1 -0.7	8.3 -1.6	55 -6	32	1.5 -0.4	1.6	31. Arabian Sea Islands	126.7 +80.2	272	30.2 +0.7	23.1 +0.3	83 +9	72	4.3 +1.4	4.8		
16. Madhya Pradesh, (East)	2.1 -16.6	11	25.5 -0.6	8.6 -2.0	65 -6	37	1.8 0	1.7											

Note.—The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh not included.

Sub-Division and station	Air temperature in °C								Rainfall in millimetres						No. of rainy days (2.5 mm. or more)		Wind speed, km. per hour			Weather phenomena—No. of days with										
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total in the month	Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm.)	Precipitation (0.3 mm. or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust storm	Ground frost	Gale	Squall	Remarks	
Bay Islands																														
Maya Bandar . . .	28.5	..	29.4	8	24.4	..	22.7	14	1.8	13.4	..	11.6	9	2	..	9.8	9.1	..	0	2	0	0	0	0	0	0	0	0	0	
Long Island . . .	29.1	..	30.1	9	22.9	..	18.3	21	2.2	2.2	..	2.2	9	1	..	6.2	4.4	..	0	1	0	0	0	0	0	0	0	0	0	
Port Blair . . .	29.5	+0.5	30.2	6,7,26	23.7	+1.7	19.9	21	16.4	70.9	-25.4	30.8	4	3	+0.7	10.8	10.2	-3.5	0	4	0	0	0	0	0	0	0	0	0	
Car Nicobar . . .	28.7	..	29.6	10,14	24.3	..	21.1	22	23.0	120.3	..	46.2	1	7	..	10.3	8.3	..	1	9	0	0	0	0	0	0	0	0	0	
Nancowry . . .	30.4	..	31.8	11,21	23.9	..	22.3	17	55.7	299.3	..	146.0	6	11	..	0.7	0.5	..	0	12	0	0	4	0	0	0	0	0	0	
Kondul . . .	27.9	..	28.8	9	24.7	..	22.4	3	172.7	246.3	..	40.8	2	13	..	..	..	..	2	16	0	0	6	0	0	0	0	0	0
Assam (including Manipur, Tripura).																														
Pasighat . . .	23.3	..	25.9	31	12.3	..	8.8	14	9.2	14.6	..	7.2	13	2	..	7.3	13.5	..	2	0	0	0	1	0	0	0	0	0	0	
Dibrugarh (Mohanbari).	23.1	+1.5	26.1	28	7.5	-0.6	4.3	7	0	8.3	-33.4	6.8	12	1	-2.7	4.4	1.9	-0.2	0	2	0	0	0	12	0	0	0	0	0	
Digboi . . .	24.4	..	..	..	9.4	..	..	..	0	9.0	..	..	..	..	..	..	..	..	..	..	0	0	0	0	0	0	0	0	0
North Lakhimpur . . .	23.4	+0.6	25.7	28,31	8.3	-0.6	5.0	6	0	9.0	-30.1	8.2	12	1	-2.3	4.5	2.5	..	0	2	0	0	0	0	0	0	0	0	0	
Sibsagar . . .	24.2	+2.8	26.3	29	9.3	-0.5	6.8	2	0	42.6	+11.9	41.8	12	1	-2.5	2.6	1.1	-0.7	2	0	0	0	0	31	0	0	0	0	0	
Gohpur . . .	23.1	..	25.4	30	6.7	..	3.8	7,21	0	0	..	..	..	0	0	2.8	2.4	..	0	0	0	0	0	0	0	0	0	0	0
Majbat . . .	25.0	..	26.9	26,27	8.7	..	6.6	7	0	0	0	..	..	..	..	6.8	3.5	..	0	0	0	0	0	0	0	0	0	0	0
Jorhat (Acrodrome)	23.8	..	26.2	29	9.0	..	7.1	4,5,7	0	0.3	..	0.3	18	0	..	..	..	..	0	1	0	0	0	12	0	0	0	0	0
Tungla . . .	26.0	..	31.7	12	9.1	..	7.0	8	0	0	0	0	..	..	..	4.2	2.8	..	0	0	0	0	0	0	0	0	0	0	0
Tezpur . . .	24.7	+1.5	27.2	28	9.1	-2.3	7.1	6	0	0	-14.7	0	..	0	-1.5	4.7	3.4	+0.7	0	0	0	0	0	0	0	0	0	0	0	
Gajghat . . .	24.8	..	27.8	29	9.7	..	7.2	7,8	0	2.0	..	2.0	18	0	..	..	..	..	0	1	0	0	0	1	0	0	0	0	0
Rangia . . .	25.1	..	27.3	30,31	11.1	..	8.5	22	0	0	..	0	..	0	..	5.5	3.2	..	0	0	0	0	0	0	0	0	0	0	0	
Chaparmukh (R) . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Goalpara . . .	25.7	..	28.4	27	10.0	..	7.8	14	0	0	..	0	..	0	..	3.9	1.6	..	0	0	0	0	0	3	0	0	0	0	0	
Gauhati . . .	24.6	+0.9	26.6	6	11.3	+0.7	9.6	21	..	0	-9.7	0	..	0	-1.1	..	0	-1.9	0	0	0	0	0	13	0	0	0	0	0	
Gauhati (Bhorjor)	24.5	+0.8	27.9	26	9.0	+0.6	6.8	14	0	0	-9.7	0	..	0	-1.1	4.9	2.8	..	0	0	0	0	0	12	0	0	0	0	0	
Dhubri (Rupsi) . . .	24.9	..	27.8	26	8.8	..	6.4	4	0	0	..	0	..	0	..	6.9	4.8	..	0	0	0	0	0	8	0	0	0	0	0	
Dhubri . . .	23.6	+0.6	26.7	30,31	12.2	+0.4	10.1	13,19	0	0	-7.9	0	..	0	-0.8	4.1	3.5	-1.5	0	0	0	0	0	8	0	0	0	0	0	
Luding . . .	26.0	+2.9	28.8	29	6.9	-1.5	4.9	20	0	0	-14.2	0	..	0	-1.4	2.5	1.1	..	0	0	0	0	0	0	0	0	0	0	0	
Tura . . .	23.4	..	27.2	25	10.2	..	6.7	13	0	0	..	0	..	0	..	5.2	6.0	..	0	0	0	0	0	0	0	0	0	0	0	
Hailong . . .	21.8	..	23.7	23	10.7	..	7.7	13	0	0	-16.8	0	..	0	-1.1	..	..	..	0	0	0	0	0	0	0	0	0	0	0
Silchar (Kumbhirgram).	26.1	..	29.1	31	10.7	..	7.4	2	0	0	..	0	..	0	..	6.9	8.5	..	0	0	0	0	0	0	0	0	0	0	0	
Silchar . . .	23.1	-2.5	28.4	26	11.0	-0.3	8.9	6	0	0	-19.6	0	..	0	-1.5	2.0	1.0	-0.8	0	0	0	0	0	0	0	0	0	0	0	
Imphal (Tulihal)	21.7	+0.6	23.9	31	2.8	-0.8	-0.7	1	0	0	-17.3	0	..	0	-1.7	6.4	3.9	-1.0	0	0	0	0	0	1	0	7	0	0	0	
Kailashahar . . .	26.1	..	29.1	31	7.8	..	5.4	4	0	0	..	0	..	0	..	2.9	1.2	..	0	0	0	0	0	4	0	0	0	0	0	
Agartala . . .	26.3	+0.8	30.1	31	8.3	-2.1	5.6	4	0	0	-17.2	0	..	0	-1.3	6.7	3.5	-0.3	0	0	0	0	0	3	0	0	0	0	0	
Sub-Himalayan West Bengal.																														
Baghdogra . . .	24.3	+0.3	26.9	26	7.4	-1.3	6.0	19,20	0	0	-18.9	0	..	0	-1.6	(n) 3.3	(m) 2.2	-1.5	0	0	0	0	0	3	0	0	0	0	0	
Jalpaiguri . . .	20.8	-2.8	23.8	26,29,31	9.4	-1.2	6.8	18	0	0	-7.9	0	..	0	-0.7	5.3	3.7	+2.3	0	0	0	0	0	5	0	0	0	0	0	
Cooch Behar . . .	24.7	..	27.5	27	8.3	..	6.3	4	0	0	-6.6	0	..	0	-0.5	4.5	2.1	..	0	0	0	0	0	28	0	0	0	0	0	
Bairaghat . . .	26.1	..	29.3	27	7.5	..	4.3	4	0	0	..	0	..	0	..	5.4	2.9	..	0	0	0	0	0	0	0	0	0	0	0	
Malda . . .	24.5	+0.9	27.2	30,31	10.4	+0.4	6.2	4	0	0	-13.7	0	..	0	-0.9	8.0	6.0	+1.7	0	0	0	0	0	0	0	0	0	0	0	
Gangetic West Bengal.																														
Berhampore . . .	25.3	+0.5	28.5	13	10.6	-1.2	6.4	4,5	0.3	3.4	-6.3	3.1	16	1	0	3.0	0.3	-1.5	0	2	0	0	0	9	0	0	0	0	0	
Suri . . .	24.7	..	27.7	13	11.5	..	6.6	5	..	2.6	..	2.6	16	1	..	..	5.8	..	0	1	0	0	0	0	0	0	0	0	0
Asansol . . .	25.3	-0.1	28.2	26	9.0	-2.5	5.4	2,4,5	0	0.4	-16.6	0.4	16	0	-1.4	8.5	3.9	-1.4	0	1	0	0	0	0	0	0	0	0	0	
Shanti Niketan . . .	25.0	..	28.0	13	10.0	..	5.9	1	0	0.6	..	0.6	16	0	..	5.5	5.3	..	0	1	0	0	0	0	0	0	0	0	0	
Krishnanagar . . .	25.5	-0.1	28.9	13	10.1	-0.8	5.2	5	0	0	-11.4	0	..	0	-0.9	..	..	..	0	0	0	0	0	0	0	0	0	0	0
Purulia . . .	24.1	-2.0	28.1	13	10.9	-1.9	8.0	1	0	0	-8.9	0	..	0	-1.1	6.3	4.2	+1.2	0	0	0	0	0	0	0	0	0	0	0	
Bankura . . .	25.7	..	28.9	13	..	..	..	..	0	0	-14.7	0	..	0	-1.2	2.9	1.3	..	0	0	0	0	0	0	0	0	0	0	0
Burdwan . . .	25.5	-0.6	28.5	15	11.8	-0.8	8.3	5 days	0	0	-11.4	0	..	0	-0.9	4.8	4.5	+2.6	0	0	0	0	0	0	0	0	0	0	0	
Barrackpore (Acrodrome).	25.3	..	29.2	13	10.2	..	6.5	4	0	0	..	0	..	0	..	..	..	..	0	0	0	0	0	5	0	0	0	0	0

(a) Mean of 17 days.

(m) Mean of 18 days.

Sub-Division and station	Air temperature in °C								Rainfall in millimetres					No. of rainy days (2.5 mm. or more)		Wind speed, km. per hour			Weather phenomena—No. of days with										
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total in the month	Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm.)	Precipitation (0.3 mm. or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust storm	Ground frost	Gale	Squall	
																													20 (a)	20 (b)	21	22	23	24	25	26	27	28
Uttar Pradesh (East)—Contd.																													
Lucknow (Amausi)	22.2	-0.7	24.8	11	4.6	-3.0	0.7	31	6.4	20.4	+1.1	14.0	15	2	+0.5	8.2	5.5	..	0	2	0	0	0	0	0	0	0	0	0
Faizabad	22.2	..	25.4	28	6.7	..	4.0	4	14.2	18.7	..	14.8	16	2	..	4.7	2.5	..	0	2	0	0	0	10	0	0	0	0	
Gorakhpur	23.3	+0.5	26.4	31	7.7	-1.5	5.3	18	8.0	16.4	+1.4	11.2	16	2	+0.7	..	..	..	0	2	0	0	0	0	0	0	0	0
Kanpur	22.0	-0.2	24.9	11	6.5	-1.1	2.7	7	9.0	41.0	+26.8	32.0	15	2	+0.6	8.5	4.6	+0.9	0	2	0	0	0	5	0	0	0	0	
Kanpur (Aerodrome)	22.1	..	24.9	31	5.9	..	1.8	4	3.6	45.3	..	41.7	15	2	..	..	..	..	0	2	0	0	0	2	0	0	0	0
Sultanpur	22.9	..	25.5	12	7.1	..	3.3	7	5.6	20.0	..	14.4	15	2	..	4.2	3.0	..	0	2	0	0	0	0	0	0	0	0	
Azamgarh	23.1	..	26.4	31	5.3	..	2.5	1	..	..	..	..	..	..	..	..	..	..	..	..	0	0	0	0	0	0	0	0
Fatehpur	22.2	-1.8	25.3	31	5.7	-2.3	1.9	7	4.0	20.9	+7.2	6.9	15	2	+0.6	6.8	4.0	+0.8	0	2	0	0	0	0	0	0	0	0	
Ballia	22.7	..	26.0	31	7.5	..	4.6	8	9.4	11.4	..	10.2	16	1	..	3.3	2.3	..	0	2	0	0	0	0	0	0	0	0	
Banda	23.8	..	27.5	29	6.3	..	3.0	4	2.2	14.2	..	12.2	15	1	..	2.6	1.4	..	0	2	0	0	0	0	0	0	0	0	
Allahabad (Bambauli)	22.7	-1.1	26.0	11	6.8	-1.6	4.4	1	9.2	23.0	+1.4	13.8	15	2	+0.9	4.5	2.2	-2.0	0	2	0	0	0	7	0	0	0	0	
Varanasi (Babatur)	22.1	-1.1	25.6	31	3.0	-6.3	0.3	6	16.6	21.0	-2.5	13.4	16	2	-0.1	8.9	6.5	-0.2	0	2	0	0	0	1	0	0	0	0	
Varanasi	21.3	-2.1	25.3	30	7.6	-1.3	4.2	1	19.2	26.4	+7.6	19.2	16	2	+0.5	6.8	3.9	+0.4	0	2	0	0	4	0	0	0	0	0	
Uttar Pradesh (West)																													
Mukhim (R)																													
Tehri (R)																													
Dehra Dun	20.0	+1.1	21.8	10	4.4	-2.3	1.1	2	3.6	7.8	-51.1	4.8	16	2	-1.9	3.7	3.0	+0.6	0	2	0	0	0	0	0	0	0	0	
Mansiari (R)																													
Roorkee	19.8	-0.4	23.3	31	4.9	-1.6	2.7	5	12.9	17.7	-24.7	12.9	16	2	-0.8	5.2	3.3	+0.4	0	2	0	0	0	0	0	0	0	0	
Najibabad	21.5	..	24.5	26	4.1	..	1.0	13	2.8	9.0	..	5.6	16	2	..	1.3	0.6	..	0	2	0	0	1	3	0	0	0	0	
Meerut	20.7	-0.4	25.8	31	4.0	-3.2	2.3	7	..	12.2	-19.5	12.2	16	1	-1.5	..	10.9	..	0	1	0	0	0	0	0	0	0	0	
Bareilly	22.0	+0.4	25.0	31	6.9	-1.0	3.9	13	3.0	13.4	-11.7	10.4	15	2	+0.1	6.4	4.4	+2.0	0	2	0	0	0	6	0	0	0	0	
Aligarh	21.6	..	25.0	31	5.1	-2.2	3.0	5	0	4.6	-7.1	4.6	15	1	-0.2	11.7	9.7	+4.4	0	1	0	0	0	1	0	0	0	0	
Mainpuri	22.3	-0.6	25.6	11,31	6.0	-1.6	0.3	1	0	58.2	+43.7	58.2	15	1	-0.3	5.3	3.0	+0.7	0	1	0	0	0	12	0	0	0	0	
Agra	22.1	-0.5	25.6	31	5.5	-1.3	2.3	10	0	18.0	+5.1	18.0	15	1	-0.2	1.4	2.6	-1.7	0	1	0	0	0	1	0	0	0	0	
Agra (Aerodrome)	22.7	..	26.5	28	4.5	..	1.0	1	0	16.6	..	16.6	15	1	..	..	..	..	0	1	0	0	1	2	0	0	0	0
Orai	19.9	..	22.9	29	5.4	..	2.2	5	1.0	18.8	..	18.8	15	1	..	7.3	5.3	..	0	1	0	0	0	0	0	0	0	0	
Jhansi	23.1	-1.4	27.4	29	6.7	-1.9	3.2	5	0	8.3	-5.4	8.3	15	1	-0.2	4.3	3.2	-0.3	0	1	0	0	0	0	0	0	0	0	
Punjab (India) (Including Delhi)																													
Pathankot	19.3	+0.9	22.6	30,31	3.7	-1.9	1.7	13,14	0	0	-92.2	0	..	0	-5.2	5.2	3.6	+2.1	0	0	0	0	0	0	0	0	0	0	
Amritsar (Rajasthan)	20.5	+1.6	24.0	31	1.7	-3.0	-0.7	3	0	0	-37.1	0	..	0	-2.9	6.9	5.0	+1.7	0	0	0	0	0	1	0	0	0	0	
Adampur (Aerodrome)	20.1	..	23.8	26	1.1	..	-1.3	13	0	0.8	..	0.8	15	0	..	..	..	..	0	1	0	0	0	3	0	0	0	0
Ludhiana	21.2	+1.8	24.9	31	2.8	-3.7	0.5	14	0	0	-38.3	0	..	0	-2.7	5.3	2.7	+0.6	0	0	0	0	0	0	0	0	0	0	
Ferozepur	20.2	..	24.3	31	1.8	..	-1.2	4	0	0	..	0	..	0	..	4.5	2.1	..	0	0	0	0	0	0	0	0	0	0	
Halwara (Aerodrome)	19.9	..	23.6	31	2.0	..	-1.1	4	0	2.3	..	2.3	15	0	..	..	..	..	0	1	0	0	0	7	0	0	0	0
Chandigarh	21.2	+1.1	24.0	24,31	4.9	-2.4	1.2	5	0.3	0.3	-55.7	0.3	16	0	-4.6	..	..	..	0	1	0	0	0	0	0	0	0	0
Ambala	22.0	+1.4	27.2	29	4.8	-1.5	1.5	5	0	0.1	-33.4	0.1	15	0	-2.5	9.1	7.2	+3.2	1	0	0	0	0	0	0	0	0	0	
Ambala (Aerodrome)	20.6	..	23.4	26,31	2.6	..	-1.1	5	0	0	..	0	..	0	..	..	..	..	0	0	0	0	0	2	0	0	0	0
Patiala	19.7	..	24.3	26	4.2	..	0.4	5	0	0	-37.6	0	..	0	-3.0	8.7	8.3	..	0	0	0	0	0	2	0	0	0	0	
Bhatinda	21.2	..	26.1	28	2.8	..	0	1,5,13	0	0	..	0	..	0	..	2.5	1.2	..	0	0	0	0	0	4	0	0	0	0	
Karnal	20.0	..	24.0	31	4.4	..	2.0	4	22.0	22.0	..	22.0	16	1	..	..	..	..	0	1	0	0	0	0	0	0	0	0
Hissar	22.3	+0.7	25.1	28,31	2.8	-2.4	0.3	1	0	0	-12.7	0	..	0	-1.4	5.3	4.9	-0.4	0	0	0	0	1	1	0	0	0	0	
New Delhi (Safdarjung)	21.3	+0.2	24.5	31	4.5	-2.8	2.4	4	0	0	-25.1	0	..	0	-2.0	12.8	8.9	-0.1	0	0	0	0	0	5	0	0	0	0	
Palam (Aerodrome)	21.2	..	25.4	31	3.2	..	0.3	20	0	0	..	0	..	0	..	..	..	..	0	0	0	0	0	1	0	0	0	0
Himachal Pradesh																													
Mandi	19.5	+1.8	22.1	23	1.2	-2.5	-1.2	8	0	4.6	-77.4	4.6	15	1	-5.2	0.4	0	-2.2	0	1	0	0	0	28	0	0	0	0	
Bilaspur	20.6	..	22.7	28	4.9	..	2.9	6 days	31.0	31.4	..	31.0	15	1	..	1.8	0.2	..	0	2	0	0	2	0	0	0	0	0	

Table with 27 columns: Sub-Division and Station, Hour of observation I.S.T., Station elevation in metres, Mean pressure in milibars (At mean sea level, At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mbs., Relative humidity %, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind speed in Km. per hour (62 or more, 20 to 61, 1 to 19), and No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm).

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—JANUARY, 1963 (PAUSA 11,—MAGHA 11, 1884 SAKA)

Table with columns: Sub-Division and Station, Hour of observation I.S.T., Station elevation in metres, Mean pressure in millibars (At mean sea level, At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mbs., Relative humidity %, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind speed in Kms. per hour (62 or more, 20 to 61, 1 to 19), Wind speed (K m.p.h.), and No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

(R) Register not received.

†wind speed and direction for 30 days.

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—JANUARY, 1963 (PAUSA 11—MAGHA 11, 1884 SAKA)

Table with 28 columns: Sub-Division and Station, Hour of observation I.S.T., Station elevation in metres, Mean Pressure in millibars (At mean sea level or height in f.p.m. of nearest standard isobaric level, At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mbs., Relative humidity %, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind Speed in Km. per hour (82 or more, 20 to 61, 1 to 19), No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—JANUARY, 1963 (PAUSA 11—MAGHA 11, 1884 SAKA)

Sub-Division and station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Octas)		Mean wind speed in km. per hour	Wind speed (Km. p. h.)			No. of observations										
			At mean sea level or height in g.p.m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction										
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Hydrometeorological Observatories—(Contd.)																												
Gandak Catchment:—(contd.)																												
Gorkhat	0830	1135	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1130	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nuwakot†	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghaghara Catchment (Trans Himalayan Region)																												
Dalikh	0830	..	..	..	..	8.3	5.5	1.9	7.0	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	11.9	7.5	2.3	7.2	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghagara Catchment																												
Dalldhura	0830	..	..	..	..	7.4	2.8	-5.0	4.4	47	..	0.7	..	6.6	0	0	28	0	3	15	10	0	0	0	0	3	0	0
	1730	..	..	..	..	8.2	4.2	-1.9	5.7	54	..	1.5	..	5.2	0	0	28	0	1	1	0	3	7	7	9	3	0	0
Sallvana	0830	..	..	..	..	11.3	7.5	3.1	7.6	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	11.8	9.1	6.4	9.6	69	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Butwal	0830	..	..	..	..	14.8	11.4	8.0	10.7	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	18.2	14.4	11.2	13.3	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Baghmati Catchment																												
Katmandu††	0830	1524	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1130	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kosi Catchment																												
Chautara	0830	..	..	..	..	8.8	7.0	5.2	8.8	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	12.9	11.0	9.5	11.9	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chepua	0830	..	..	..	..	4.7	3.2	1.7	6.9	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	9.1	6.4	4.4	8.4	73	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Walungchung Gola	0830	..	..	..	..	3.5	2.3	0.9	6.5	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	0.2	(b) -0.8	(b) -1.4	5.4	(b) 90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplethok	0830	..	..	..	..	9.7	6.1	1.5	6.8	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	12.4	7.9	2.7	7.4	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur	0830	..	..	..	..	8.7	6.7	4.7	8.5	76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	8.9	7.3	5.8	9.2	81	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung	0830	..	..	..	..	5.1	3.8	2.2	7.2	82	..	1.7	..	..	..	..	..	0	0	0	0	0	0	0	0	31	0	0
	1130	..	..	..	..	12.3	8.2	4.1	8.2	58	..	2.0	..	..	..	..	..	2	0	0	0	5	2	7	1	14	0	0
	1730	..	..	..	..	9.9	6.5	2.8	7.5	62	..	2.7	..	..	..	..	..	0	0	0	0	15	7	6	0	3	0	0
Okhaldhunga	0830	..	..	..	..	8.3	5.4	1.9	7.1	66	..	0.5	..	2.5	0	0	21	3	1	1	5	0	1	5	3	10	0	0
	1130	..	..	..	..	12.1	7.7	3.0	7.7	55	..	1.1	..	4.4	0	0	28	2	2	0	1	2	8	10	3	3	0	0
	1730	..	..	..	..	8.6	6.5	4.3	8.3	75	..	2.1	..	3.5	0	0	24	2	0	3	2	0	3	9	5	7	0	0
Chainpur	0830	..	..	..	..	10.9	9.0	7.1	10.1	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	11.4	10.1	8.9	11.4	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angbung	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barabakhetra	0830	146	1019.0	1001.7	..	13.4	11.1	8.7	11.4	75	..	0.5	..	4.5	0	0	29	1	11	5	7	0	5	0	0	2	0	0
	1130	..	1016.5	999.6	..	20.6	14.7	9.5	12.0	50	..	1.2	..	4.1	0	0	28	0	2	1	0	2	13	3	7	3	0	0
	1730	..	1015.0	997.8	..	17.1	13.8	10.9	13.7	67	..	1.5	..	3.5	0	0	31	0	8	11	10	0	1	1	0	0	0	0
Tista Catchment																												
Gangtok	0830	1812	1523.3	821.1	..	7.0	5.2	3.2	7.7	77	..	2.5	..	1.8	0	0	16	2	8	0	0	2	3	1	0	15	0	0
	1130	..	1507.5	820.1	..	12.1	8.1	4.0	8.2	59	..	2.9	..	4.9	0	0	29	3	3	1	2	4	11	5	0	2	0	0
	1730	..	1495.8	818.7	..	9.1	6.6	4.1	8.1	71	..	3.5	..	3.3	0	0	30	0	1	0	2	8	17	2	0	1	0	0
Geziug	0830	..	..	..	..	10.2	7.1	3.9	8.1	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	10.6	7.9	5.3	8.9	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Data not reliable.

††Data given under Nepal.

(b) Mean of 29 days.

(R) Register not received.

MONTHLY MEANS OF UPPER WIND

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 40 stations all the observations were taken by means of pilot balloons and at 14 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radio wind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Table IV and V :

n = represents the number of observations;

V = represents the mean wind speed in metres per second irrespective of direction;

v = represents the resultant mean velocity in metres per second;

D = represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a.m.s.l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

s. No.	Station	Lat. N.	Long. E.	Height of anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
1	Agartala	23°53'	91°15'	17	28th November, 1951 .	0530		1730	2330
2	Ahmadabad	23°04'	72°38'	61	19th May, 1928 . . .	0530*	1130	1730*	2330
3	Allahabad/Bamhrauli	25°27'	81°44'	103	28th February, 1930 .	0530*	1130	1730*	2330
4	Ambala	30°23'	76°46'	279	1st April, 1941 . . .	0530	1130	1730	2330
5	Anantapur	14°41'	77°37'	365	12th February, 1946 .	0530		1730	2330
6	Asansol	23°41'	86°59'	135	29th May, 1942 . . .	0530		1730	2330
7	Aurangabad/Chikalthan	19°51'	75°24'	585	7th October, 1951 . .	0530		1730	2330
8	Bahraich	27°34'	81°36'	134	1st October, 1961 . .	0530		1730	
9	Bangalore	12°58'	77°35'	936	19th May, 1915 . . .	0530@	1130	1730@	2330
10	Barcilly	28°22'	79°24'	181	12th January, 1943 .	0530		1730	
11	Begampet	17°27'	78°28'	543	1st September, 1929 .	0530		1730	2330
12	Bhagalpur	25°14'	86°57'	61	19th May, 1950 . . .	0530		1730	
13	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943 .	0530		1730	2330
14	Bhubaneswar	20°15'	85°50'	54	5th December, 1942 .	0530		1730	2330
15	Bhuj/Rudramata	23°15'	69°48'	90	14th September, 1937 .	0530		1730	2330
16	Bikaner	28°00'	73°18'	229	18th October, 1946 .	0530		1730	2330
17	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933 . . .	0530*	1130	1730*	2330
18	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921 . . .	0530*	1130	1730*	2330
19	Cochin/Willingdon†	09°56'	76°14'	13	16th March, 1942 . .	0530		1730	2330
20	Darjeeling	27°03'	88°16'	2115	21st May, 1956 . . .	0830		1730	
21	Dehra Dun	30°19'	78°03'	692	1st October, 1958 . .	0530		1730	
22	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June, 1948 . . .	0530	1130	1730	2330
23	Gadag	15°25'	75°38'	650	3rd May, 1943 . . .	0530		1730	2330
24	Gauhati	26°05'	91°43'	55	12th March, 1955 . .	0530*	1130	1730*	2330
25	Gaya	24°45'	84°57'	119	19th March, 1937 . .	0530		1730	2330
26	Gopalpur	19°16'	84°53'	24	15th February, 1946 .	0530		1730	2330
27	Gorakhpur	26°45'	83°22'	83	5th January, 1943 . .	0530		1730	
28	Gwalior	26°14'	78°15'	208	7th May, 1938 . . .	0530	1130	1730	2330
29	Imphal/Tulihal	24°46'	93°54'	782	8th March, 1952 . . .	0530	1130	1730	2330
30	Jabalpur	23°10'	79°57'	402	30th July, 1928 . . .	0530		1730	2330
31	Jagdalpur	19°05'	82°02'	562	25th March, 1948 . .	0530		1730	2330
32	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953 . . .	0530		1730	2330
33	Jamshedpur	22°49'	86°11'	144	23rd July, 1942 . . .	0530		1730	
34	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530		1730	2330
35	Jodhpur	26°18'	73°01'	229	15th October, 1934 .	0530*	1130	1730*	2330
36	Lucknow/Amausi	26°45'	80°53'	133	20th November, 1950 .	0530		1730	2330
37	Madras/Minambakkam	13°00'	80°11'	29	8th April, 1926 . . .	0530*	1130	1730*	2330
38	Mangalore/Bajpe	12°55'	74°53'	104	25th May, 1959 . . .	0530		1730	2330
39	Minicoy	08°18'	73°00'	15	14th April, 1941 . . .	0530		1730	2330
40	Nagpur/Sonegaon	21°06'	79°03'	316	23rd April, 1943 . . .	0530*	1130	1730*	2330
41	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936 . .	0530*	1130	1730*	2330
42	Poona	18°32'	73°51'	593	5th January, 1925 . .	0530		1730	2330
43	Port Blair	11°40'	92°43'	95	29th October, 1945 . .	0530*	1130	1730*	2330
44	Raipur	21°14'	81°39'	308	15th July, 1944 . . .	0530		1730	2330
45	Raxaul	26°59'	84°51'	83	28th October, 1957 . .	0530		1730	
46	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530		1730	2330
47	Srinagar	34°06'	74°48'	1603	1st August, 1962 . . .	0530*		1730*	
48	Tiruchirappalli	10°46'	78°43'	96	22nd June, 1936 . . .	0530		1730	2330
49	Trivandrum	08°29'	76°57'	73	8th December, 1928 .	0530*	1130	1730*	2330
50	Udaipur	24°35'	73°42'	587	24th June, 1947 . . .	0530		1730	2330
51	Vengurla	15°52'	73°38'	8	22nd November, 1941 .	0530		1730	2330
52	Veraval	20°54'	70°22'	17	13th October, 1941 . .	0530		1730	2330
53	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942 . . .	0530		1730	2330
54	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928 .	0530*	1130	1730*	2330

*Radio wind ascents.

@Radiosonde ascents followed by optical theodolite.

†Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1963 (Pausa II—Magha II, 1884 Saka)

Station	AGARTALA												AHMADABAD										
	0530				1730				2330				0530*				1130				1730*		
Time in I.S.T.																							
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v
Surface	31	0.5	0.2	083	31	1.1	0.7	276	31	0.6	0.2	036	31	3.3	2.9	073	31	4.2	3.8	083	31	3.4	2.8
0.15 a.g.	31	3.5	1.9	032	31	2.5	1.9	285	31	3.9	2.9	328	31	8.8	8.2	074	31	4.5	4.3	081	31	4.7	3.7
0.3 a.m.s.l.	31	3.3	2.3	018	31	2.6	1.8	275	31	3.8	3.1	328	31	8.1	7.5	077	31	5.2	4.6	085	31	4.5	3.6
0.6 "	31	2.9	1.7	016	31	2.3	1.4	267	31	3.1	2.1	319	31	7.3	6.1	085	31	5.0	4.1	090	31	4.7	3.7
0.9 "	31	2.7	0.5	024	31	2.2	1.2	250	31	3.0	1.3	290	31	5.6	2.2	095	31	4.7	2.8	070	31	4.1	3.0
1.5 "	31	4.2	2.2	089	31	3.3	1.9	261	31	4.5	2.0	252	30	4.7	1.2	305	31	3.9	0.1	025	31	3.5	1.2
2.1 "	31	7.3	5.9	286	31	6.7	5.5	276	31	7.7	·	270	30	5.1	2.8	264	31	4.1	1.8	248	31	4.3	1.7
3.0 "	31	12.1	10.8	283	31	11.3	10.8	282	29	11.4	10.9	280	30	7.9	6.2	266	31	6.3	4.5	259	31	7.3	5.4
3.6 "	27	13.9	13.0	278	30	14.3	13.9	282	11	10.8	10.4	272	30	9.9	8.9	272	28	8.5	7.3	260	31	10.4	8.3
4.5 "	20	16.4	15.9	270	29	18.7	18.3	277	3	12.8	12.5	266	30	13.5	12.4	268	28	12.5	11.1	266	31	13.3	12.0
5.4 "	15	19.8	19.1	267	27	23.0	22.6	275					30	18.1	16.4	269	28	16.0	14.9	270	31	16.5	15.1
6.0 "	9	21.7	21.1	272	27	25.0	24.5	272					30	20.4	18.7	268	28	18.5	17.5	268	31	18.2	16.8
7.2 "	2	35.0	34.3	273	18	28.2	27.6	266					30	26.4	24.7	267	22	26.4	25.3	262	31	24.4	22.5
9.0 "					6	40.2	39.5	252					19	39.0	36.8	257	4	30.3	29.3	270	27	32.4	30.0

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA						
	2330				0530*				1130				1730*				2330				0530		
Time in I.S.T.																							
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v
Surface	31	2.2	1.7	046	31	0.3	0.1	278	31	1.5	0.7	281	31	0.3	0.2	310	31	0.1	0.1	284	31	1.0	0.9
0.15 a.g.	31	6.6	5.9	045	30	4.6	3.0	312	30	2.3	1.5	284	31	3.0	2.3	304	31	4.5	3.2	307	30	7.0	5.8
0.3 a. m. s. l.	31	6.5	5.8	048	30	4.6	3.0	312	30	2.5	1.5	282	31	3.0	2.3	304	31	4.7	3.5	306	30	2.9	2.2
0.6 "	31	5.6	4.8	046	30	4.7	3.1	322	30	3.9	2.8	302	31	3.7	2.9	310	31	5.0	3.6	303	30	7.5	5.9
0.9 "	31	4.7	3.6	053	30	4.8	4.0	306	29	4.8	4.2	308	31	4.4	3.7	308	30	5.2	4.3	300	30	6.9	4.9
1.5 "	31	4.1	1.4	081	30	6.5	5.7	302	28	6.4	5.4	306	31	6.7	6.0	298	30	6.3	5.6	300	30	6.1	4.3
2.1 "	31	4.6	2.0	241	30	9.0	8.2	297	28	8.5	7.9	296	31	8.4	8.0	293	29	10.7	9.8	298	30	5.3	4.0
3.0 "	30	5.9	3.9	265	30	10.8	10.2	289	28	10.3	9.6	287	31	9.6	9.0	287	26	8.4	7.6	300	29	5.9	4.0
3.6 "	4	6.6	4.9	290	30	11.8	11.3	285	28	11.4	10.5	284	31	10.3	9.9	285	11	8.5	8.4	280	26	6.3	4.6
4.5 "					30	13.5	13.0	283	27	14.8	13.2	276	30	14.1	13.4	280	2	5.3	5.2	291	18	8.9	7.8
5.4 "					30	17.7	16.9	273	27	21.4	18.4	277	30	18.9	17.0	275					15	11.6	10.9
6.0 "					30	21.5	17.5	271	25	23.1	22.5	268	29	21.0	20.2	271					9	14.5	13.3
7.2 "					30	28.1	27.1	272	16	26.8	25.7	264	29	26.8	26.2	270					1	31.0	31.0
9.0 "					26	37.9	37.3	265	4	33.4	31.1	264	21	38.0	31.0	262							

TABLE IV--MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	AMBALA												ANANTAPUR											
	1130				1730				2330				0530				1730				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Height in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.3	1.0	312	31	2.3	2.1	303	31	1.2	1.1	318	31	1.3	1.2	089	31	4.5	4.2	086	31	3.9	3.8	099
15 a.g.	31	4.5	3.5	330	31	4.6	4.1	300	31	8.2	7.4	323	31	4.4	4.0	093	31	6.3	6.1	081	31	7.4	7.2	100
3 a.m.s.l.	31	2.1	1.6	319	31	3.0	2.6	300	31	3.3	2.9	323												
6 "	31	6.2	4.9	326	31	5.2	4.6	303	31	7.3	6.7	325	30	5.6	5.2	103	31	6.2	5.9	083	31	7.8	7.7	100
9 "	31	6.0	4.1	325	31	5.6	4.6	313	31	5.9	4.8	325	30	7.5	7.3	096	31	5.8	5.6	084	31	7.4	7.2	098
15 "	31	5.7	3.0	318	31	5.5	4.2	323	31	5.1	3.0	328	29	6.6	5.8	080	30	5.8	5.6	085	31	5.0	4.4	083
21 "	31	5.1	2.8	317	31	5.1	3.5	326	31	4.3	2.7	307	29	6.3	4.8	070	30	5.8	4.9	079	29	5.7	4.7	074
30 "	29	6.0	3.3	302	31	4.7	2.7	313	30	4.5	2.3	283	25	4.4	2.4	060	28	4.4	2.6	057	27	4.4	2.4	057
36 "	28	6.5	3.9	285	31	5.9	3.2	303	6	4.3	3.4	228	22	4.2	0.9	031	22	4.7	1.0	023	20	4.7	1.9	028
45 "	26	8.6	6.9	278	30	7.8	5.3	287					21	4.1	1.0	296	20	4.5	1.4	348	10	5.3	2.4	296
54 "	22	12.0	10.1	275	29	11.6	9.2	287					18	5.6	2.5	284	18	5.3	2.8	292	6	5.6	2.1	312
60 "	20	14.3	13.1	271	28	15.4	12.7	282					18	6.2	4.7	260	16	6.5	4.3	274	4	7.4	5.9	253
72 "	9	18.7	17.4	277	8	23.5	22.1	274					18	9.4	8.3	240	15	8.4	7.8	248				
80 "	5	32.3	30.7	279	5	37.8	34.3	274					11	14.0	12.8	225	12	13.4	12.4	232				

Station	ASANSOL												AURANGABAD/CHIKALTHAN											
	0530				1730				2330				0530				1730				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Height in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.7	0.6	312	31	1.5	1.2	317	31	0.7	0.7	328	31	0.2	0.2	090	31	1.2	0.5	127	31	1.0	0.7	066
15 a.g.	31	5.6	5.0	336	31	3.9	2.6	317	31	6.3	4.4	359	31	6.2	5.5	104	31	2.8	1.1	152	31	6.6	5.8	081
3 a.m.s.l.	31	6.0	5.3	342	31	4.2	3.1	313	31	6.5	4.4	358												
6 "	31	6.9	5.4	339	31	4.3	3.0	322	31	5.2	3.6	340												
9 "	31	6.5	4.8	317	31	4.5	3.2	320	31	4.6	3.4	299	31	7.8	7.0	121	31	3.0	1.2	129	31	7.5	6.4	087
15 "	31	7.2	5.7	297	31	6.8	5.6	306	31	6.5	5.7	291	31	5.5	3.9	139	31	3.2	1.1	074	31	5.5	3.9	117
21 "	28	8.6	7.9	300	31	9.7	9.1	300	31	8.7	8.2	298	31	3.9	2.1	235	31	3.4	0.6	204	30	4.3	2.7	189
30 "	24	10.2	9.6	291	31	12.2	11.7	293	24	10.2	9.7	292	28	6.0	4.3	261	28	4.4	2.6	253	28	6.1	3.9	232
36 "	17	11.8	9.6	277	25	13.7	13.0	293	11	10.0	9.6	292	8	7.4	5.7	288	22	6.6	4.8	260	13	6.8	5.4	239
45 "	12	14.3	14.0	259	22	16.3	15.2	280	7	13.8	13.2	271					21	9.3	7.9	272				
54 "	7	17.2	16.7	262	10	19.1	18.0	270									19	13.3	12.0	265				
60 "	4	20.7	20.0	269	7	22.2	20.7	276									13	15.4	14.1	265				
72 "					3	25.0	24.8	259									2	15.7	15.5	255				
80 "					1	40.0	40.0	240																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	BAHRAICH												BANGALORE															
	0530				1130				1730				0530*				1130				1730*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.3	0.2	286	31	0.6	0.4	284	31	0.6	0.5	264	31	3.2	3.1	078	30	4.5	4.2	080	31	3.7	3.6					
0.15 a.g.	30	5.2	4.3	312	29	2.5	2.1	294	30	3.3	2.9	272	26	7.4	7.1	076	29	6.1	5.7	078	29	5.9	5.6					
0.3 a.m.s.l.	30	5.3	4.5	312	29	2.6	2.2	293	30	3.4	2.6	306																
0.6 "	29	4.9	3.8	306	29	3.8	2.4	290	30	3.9	3.3	285																
0.9 "	29	4.8	3.7	302	29	4.5	2.5	296	30	4.5	3.6	293																
1.5 "	29	6.4	4.3	305	29	5.6	3.0	303	30	6.3	4.3	304	26	7.9	6.6	076	29	6.3	5.7	077	29	6.0	5.7					
2.1 "	29	7.5	5.4	299	29	7.1	4.9	301	30	7.5	6.1	300	24	6.5	5.6	083	27	5.7	4.9	076	28	5.7	5.3					
3.0 "	29	8.7	7.8	295	29	8.4	8.0	296	30	9.1	8.4	299	22	5.3	4.2	070	23	5.2	3.1	058	27	5.3	4.0					
3.6 "	23	8.9	8.5	293	29	9.9	9.3	291	30	10.4	9.8	293	22	4.9	3.1	085	23	4.6	3.1	069	25	4.8	2.2					
4.5 "	18	10.3	9.1	290	29	12.3	11.6	282	30	12.9	12.3	288	20	4.6	2.0	060	22	4.7	2.6	061	23	5.0	1.9					
5.4 "	14	11.8	10.7	284	28	15.7	14.9	281	30	17.8	16.6	282	19	5.4	1.9	043	21	4.6	1.9	046	21	5.3	2.0					
6.0 "	8	16.3	15.1	270	26	17.4	16.6	280	28	18.2	17.3	286	17	5.8	0.2	270	21	5.6	0.1	035	19	5.5	1.7					
7.2 "	6	14.7	13.7	279	23	23.7	22.6	276	22	22.9	22.8	279	16	8.4	4.4	227	15	6.9	2.9	240	18	8.7	6.7					
9.0 "	1	20.5	20.5	270	13	33.6	33.1	274	8	29.2	28.7	277	14	9.7	7.8	225	12	9.6	5.5	233	17	11.6	9.8					

Station	BANGALORE				BAREILLY				BEGAMPET																							
	2330				0530				1730				0530				1730				2330											
Time in I.S.T.																																
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.0	4.0	087	31	0.9	0.5	300	31	1.2	1.0	289	31	0.9	0.8	095	31	2.5	1.5	085	31	1.5	1.5									
0.15 a.g.	28	9.5	9.4	093	31	5.7	4.5	317	31	3.8	1.8	294	31	5.7	5.2	117	31	4.4	3.8	092	31	6.6	6.0									
0.3 a.m.s.l.					31	5.4	4.3	313	31	3.7	3.2	287																				
0.6 "					31	6.1	4.6	311	31	4.6	4.0	290	31	3.9	3.5	108	31	4.1	3.6	091	31	5.1	4.7									
0.9 "					30	6.5	4.4	312	30	5.2	4.7	294	31	6.4	6.0	110	31	4.4	3.8	090	31	7.1	6.5									
1.5 "	28	8.0	7.7	085	30	5.9	4.5	304	30	6.0	5.2	297	30	6.0	4.7	087	31	4.5	3.7	084	31	6.9	6.0									
2.1 "	26	5.4	3.9	074	29	6.0	5.3	298	30	6.7	5.9	300	30	4.8	2.8	037	31	4.3	3.1	063	31	5.6	3.7									
3.0 "	26	4.9	3.8	068	24	6.5	5.9	290	30	7.5	6.9	298	30	4.5	2.1	017	30	4.3	1.8	011	31	4.9	2.1									
3.6 "	24	4.7	3.4	057	18	7.9	7.1	285	30	8.6	7.7	295	28	4.9	1.7	320	29	4.1	2.3	319	22	4.7	2.2									
4.5 "	16	4.4	1.1	013	15	10.6	9.1	279	30	10.7	10.0	288	25	5.4	4.4	285	29	7.0	6.0	274	7	6.0	4.3									
5.4 "	7	5.0	2.2	278	9	9.9	7.3	287	28	18.7	14.2	287	24	8.1	7.0	280	27	9.1	7.9	274	2	4.3	4.0									
6.0 "	3	6.2	6.1	244	7	11.1	8.7	287	23	16.5	15.3	283	19	8.9	8.1	263	24	10.0	9.1	262	2	5.3	5.3									
7.2 "					2	7.5	6.9	278	11	18.6	17.3	269	17	11.5	10.9	258	22	12.1	11.5	250												
9.0 "									2	18.7	18.6	274	11	14.7	13.6	245	15	18.9	18.1	245												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1963 (Pausa II—Magha II 1884, Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR											
	0530				1730				0530				1730				2330				0530											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.9	0.7	234	31	1.5	1.3	272	31	2.5	2.1	076	31	2.1	1.4	048	31	2.8	2.6	050	31	2.0	1.4	023								
0.15 a. g.	31	5.0	4.1	285	31	4.0	3.5	291	28	6.6	5.7	090	30	3.4	2.4	036	30	7.1	6.6	066	29	3.7	1.7	029								
0.3 a. m. s. l.	31	5.9	4.6	305	31	4.4	3.7	288													29	4.2	2.3	065								
0.6 "	31	4.9	3.8	316	31	4.7	4.1	289	28	5.7	5.0	083	30	3.1	2.1	037	30	6.9	6.5	063	29	4.2	1.8	063								
0.9 "	31	4.3	2.5	313	31	4.9	4.4	287	28	4.9	2.3	094	30	3.3	2.1	041	30	5.5	4.4	071	29	4.3	2.8	032								
1.5 "	31	6.1	4.1	301	31	6.0	4.8	294	28	4.2	1.7	283	30	3.4	1.4	325	30	3.8	0.4	270	29	4.6	3.6	359								
2.1 "	30	8.0	7.2	297	31	8.4	7.5	295	28	5.4	4.7	274	30	4.9	3.8	284	30	4.8	3.2	263	29	4.2	3.5	331								
3.0 "	30	11.6	11.2	289	30	12.4	12.0	294	27	7.6	6.8	277	30	8.3	7.3	274	29	7.8	6.8	271	29	6.7	5.6	300								
3.6 "	24	11.5	10.6	277	29	14.7	14.3	292	25	9.9	9.0	275	30	11.1	10.2	276	6	7.7	7.6	263	26	7.5	6.6	283								
4.5 "	16	13.8	13.0	277	26	16.9	16.3	285	18	12.3	11.5	273	27	14.1	13.2	277	1	6.5	6.5	250	21	11.6	11.2	277								
5.4 "	11	14.7	14.3	267	22	19.0	18.2	280	16	15.3	14.5	275	26	17.4	16.2	274					14	14.4	13.0	271								
6.0 "	10	19.6	19.1	268	17	21.8	20.9	275	16	17.7	16.8	273	22	18.7	17.6	275					9	14.8	13.0	257								
7.2 "	2	27.7	27.5	255	11	28.0	26.9	267	13	21.2	20.0	268	15	22.9	21.3	274					1	17.5	17.5	280								
9.0 "	1	37.5	37.5	275	4	48.3	46.7	260	5	34.3	33.6	269	1	25.0	25.0	290					1	24.0	24.0	270								

Station	BHUBANESHWAR								BHUJ/RUDRAMATA												BIKANER							
	1730				2330				0530				1730				2330				0530							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.7	1.1	064	31	1.5	0.6	134	31	0.4	0.2	279	31	3.8	3.5	033	31	0.7	0.2	327	31	0.8	0.7	083				
0.15 a. g.	31	3.4	1.5	061	31	4.5	3.2	134	31	6.2	4.7	030	31	4.2	3.9	033	31	6.1	4.7	020	31	6.3	5.4	101				
0.3 a. m. s. l.	31	3.2	1.4	058	31	4.1	2.2	127	31	7.3	6.7	041	31	4.5	4.2	033	31	6.7	5.5	028	31	5.2	4.8	108				
0.6 "	31	3.2	1.4	021	31	3.7	0.6	062	31	7.8	7.1	045	31	4.5	4.0	033	31	7.1	6.5	034	31	4.7	2.9	070				
0.9 "	31	3.0	1.7	358	31	4.8	2.2	349	31	6.1	5.1	047	31	4.3	3.6	037	31	6.3	5.8	038	31	4.0	2.5	031				
1.5 "	31	4.1	3.3	004	31	4.7	3.9	344	31	5.1	1.1	071	31	3.9	1.0	031	31	5.3	2.7	059	31	5.0	3.6	347				
2.1 "	30	5.9	5.2	327	31	4.8	3.8	337	30	5.2	2.5	268	31	4.3	2.0	267	31	4.7	2.2	213	31	5.3	3.3	322				
3.0 "	27	7.3	6.9	326	31	5.9	4.8	295	29	6.9	4.8	278	31	8.5	5.7	264	29	6.8	4.0	263	31	5.7	4.2	297				
3.6 "	27	8.9	8.3	291	7	7.1	5.9	286	6	8.9	7.7	275	31	10.0	7.4	267	7	7.2	6.1	270	31	8.6	5.9	280				
4.5 "	27	11.4	11.0	280					2	7.3	6.1	291	31	12.4	10.4	266	2	7.0	6.9	290	28	10.7	9.7	280				
5.4 "	26	14.3	13.6	271					2	10.3	9.6	281	31	15.6	14.2	266	1	9.0	9.0	275	15	15.8	13.9	270				
6.0 "	23	16.3	15.5	266					1	14.0	14.0	260	29	16.3	14.9	266	1	12.5	12.5	260	3	16.3	13.7	283				
7.2 "	14	20.9	19.9	266									8	22.3	20.5	263					2	22.0	21.5	264				
9.0 "	4	27.4	26.9	263									7	33.7	33.4	267												

TABLE IV.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	BIKANER								BOMBAY/SANTACRUZ																			
	1730				2330				0530*				1130				1730*				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.5	0.5	358	31	0.4	0.4	038	31	0.6	0.5	056	31	1.2	1.1	075	31	4.0	3.6	314	31	1.2	1.1	0				
0.15 a.g.	31	2.5	2.1	012	31	7.0	6.4	041	31	5.0	3.7	122	31	3.1	2.5	073	31	5.6	5.3	325	31	6.0	5.8	3				
0.3 a. m. s. l.	31	2.3	1.8	010	31	6.3	5.7	049	31	4.7	3.6	065	31	3.9	3.2	090	31	5.1	4.7	331	31	6.2	5.9	3				
0.6 „	31	2.6	2.1	022	31	5.5	4.8	051	31	4.7	3.4	060	31	4.3	3.1	114	31	3.3	2.7	344	31	5.0	4.4	3				
0.9 „	31	2.4	1.2	025	31	3.8	2.5	071	31	5.2	2.4	095	31	4.2	2.8	117	31	3.1	1.6	016	31	4.2	3.1	0				
1.5 „	31	2.5	1.5	015	31	3.1	0.9	234	31	4.5	2.1	112	31	3.5	1.6	180	31	4.1	1.8	074	31	4.4	2.5	0				
2.1 „	31	3.9	2.3	293	31	4.4	1.6	289	31	4.6	2.6	192	31	3.5	1.9	202	31	4.1	1.7	116	31	5.6	3.7	1				
3.0 „	31	6.4	5.0	284	31	5.8	4.7	294	31	5.6	3.9	236	31	4.8	2.2	236	31	4.3	1.5	219	31	5.1	2.2	1				
3.6 „	31	8.3	6.9	281	19	6.9	5.0	293	31	6.3	3.8	270	30	6.1	3.7	267	31	5.3	2.5	258	27	5.1	2.7	1				
4.5 „	31	11.7	9.6	277	4	5.9	5.0	289	31	9.3	6.3	282	30	8.6	6.6	270	31	7.6	5.5	269	16	8.9	6.6	1				
5.4 „	31	15.7	13.4	275	1	8.0	8.0	265	29	12.2	10.0	278	30	12.2	10.6	263	29	10.8	9.1	272	5	11.1	10.6	1				
6.0 „	29	17.5	16.0	266	1	11.0	11.0	245	29	14.2	11.9	277	29	14.2	12.4	259	29	13.9	12.7	273	4	10.3	10.0	1				
7.2 „	11	20.8	17.0	267	1	10.0	10.0	250	29	18.8	16.7	272	27	17.7	16.3	261	28	16.7	15.5	270	2	12.0	10.9	1				
9.0 „	1	11.0	11.0	275					26	25.8	20.2	267	17	24.2	23.2	252	27	22.5	21.8	260								

Station	CALCUTTA/DUM DUM								COCHIN/WILLINGDON †														
	0530*				1130				1730*				2330				0530			1730			
Time in I. S. T.																							
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v
Surface	31	0.6	0.6	360	31	1.4	1.3	353	31	0.1	0.1	360	31	0.3	0.3	350	31	1.0	0.9	057	31	2.2	2.0
0.15 a. g.	31	4.7	4.1	004	31	2.9	2.4	351	31	3.5	2.7	323	31	4.4	3.1	337	31	3.8	3.2	077	31	3.5	3.2
0.3 a. m. s. l.	31	4.4	3.8	003	31	3.1	2.7	356	31	3.5	2.7	330	31	4.2	3.0	338	31	3.2	2.5	077	31	3.1	2.5
0.6 „	31	4.2	3.6	005	31	3.5	2.8	349	31	3.6	2.9	340	31	4.4	3.5	337	31	2.7	1.6	084	31	2.3	1.6
0.9 „	31	5.0	3.8	347	31	4.2	3.2	341	31	3.9	3.2	332	31	5.0	4.2	331	31	3.1	1.9	071	31	2.9	2.3
1.5 „	31	5.9	5.0	321	31	6.4	5.4	321	31	5.8	4.9	323	31	6.0	5.4	318	31	3.8	2.6	060	31	4.9	4.2
2.1 „	31	7.0	6.1	306	31	7.7	7.0	307	31	7.5	6.9	306	31	6.6	6.1	308	31	4.3	2.9	082	28	4.5	3.5
3.0 „	31	8.5	7.9	285	30	9.8	9.4	290	31	9.6	9.1	291	20	8.7	8.1	294	28	4.2	2.3	080	26	4.5	2.9
3.6 „	31	10.5	10.0	279	30	11.5	11.2	282	31	11.1	10.5	285	2	7.3	6.5	313	23	4.8	2.6	076	21	4.2	2.9
4.5 „	31	14.3	14.0	276	29	15.6	15.2	277	31	15.3	14.4	277					11	3.8	1.7	055	19	4.1	3.2
5.4 „	31	17.5	17.0	271	27	20.0	19.4	269	30	18.9	18.6	272					1	9.0	9.0	085	18	4.7	1.9
6.0 „	31	20.5	19.8	269	26	22.9	22.3	269	30	21.3	20.7	268					1	9.5	9.5	085	17	4.8	0.8
7.2 „	30	26.4	25.8	263	13	25.0	24.6	268	30	25.7	25.0	264									12	5.7	3.1
9.0 „	28	34.9	34.0	261	2	35.5	35.1	278	25	33.1	32.4	258									2	6.5	6.5

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1969 (Pausa II—Magha II, 1884 Saka)

Station	COCHIN/ WILLINGDON†				DARJEELING								DEHRA DUN								DIBRUGARH/ MOHANBARI			
	2330				0530				1730				0530				1730				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.7	0.5	102	31	C A L M			31	0.2	0.2	233	31	0.1	0.1	039	31	0.7	0.4	230	31	0.6	0.5	070
15 a. g.	31	2.4	0.8	146	25	1.4	1.0	131	19	1.6	1.4	226	30	1.4	1.0	063	31	2.5	1.6	243	29	3.9	3.4	062
3 a. m. s. l.	31	2.5	0.6	139																	29	3.9	3.6	056
6 "	31	3.1	1.6	110																	29	2.6	2.3	045
9 "	31	3.6	2.8	092									30	1.3	0.7	088	31	2.4	1.5	243	29	2.0	1.6	036
15 "	31	4.2	3.7	087									30	1.5	0.4	133	31	1.8	0.4	284	29	1.8	1.0	088
21 "	31	4.3	3.7	079									30	2.7	0.1	290	31	2.5	0.6	329	28	2.5	0.7	126
30 "	24	4.3	3.2	078	25	4.7	2.1	285	19	3.2	1.4	300	30	3.5	1.3	284	29	3.6	1.2	321	25	4.0	0.6	036
36 "	12	3.0	1.3	092	23	10.7	9.5	273	16	7.8	7.3	285	30	4.9	2.4	290	29	4.4	1.7	310	16	4.6	0.7	291
45 "					21	15.3	14.1	277	14	15.2	14.8	279	26	7.6	5.9	287	29	5.4	3.7	293	13	7.6	4.3	271
54 "					15	17.5	16.4	273	13	20.3	20.0	285	20	10.3	8.3	273	29	9.8	8.2	280	3	19.5	10.2	277
60 "					11	18.3	17.9	271	12	24.6	23.9	285	14	12.0	8.9	276	28	14.3	13.0	278	2	12.7	12.1	262
72 "					5	24.4	24.3	271	7	29.7	27.5	276					23	21.1	15.2	275				
80 "					2	55.0	49.7	252	2	34.5	34.4	265					5	23.4	23.0	267				

Station	DIBRUGARH/MOHANBARI												GADAG											
	1130				1730				2330				0530				1730				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.6	0.1	017	31	0.3	0.2	024	31	0.3	0.2	010	31	3.9	3.5	118	31	3.5	3.1	085	31	4.2	3.9	090
15 a. g.	30	1.8	1.4	053	31	1.9	1.4	027	31	2.9	2.4	035	31	8.7	8.3	120	31	5.6	5.3	085	31	9.8	9.5	091
3 a. m. s. l.	30	1.8	1.5	037	31	1.9	1.5	032	31	2.7	2.2	043												
6 "	30	1.6	1.4	043	31	1.8	1.3	041	31	2.3	2.0	048												
9 "	30	1.6	1.2	048	31	1.6	0.9	044	31	2.1	1.7	072	31	9.0	8.6	114	31	6.0	5.7	086	31	9.9	9.5	094
15 "	30	1.9	0.3	107	31	2.2	0.9	180	31	2.2	1.2	077	31	7.1	6.3	095	31	5.9	5.6	088	31	8.5	8.0	096
21 "	30	2.4	0.4	121	30	3.2	2.5	183	29	2.1	0.2	272	31	5.0	3.3	080	31	5.4	4.6	090	31	9.9	5.7	090
30 "	29	3.8	0.6	110	29	3.7	2.5	183	26	2.8	1.7	237	30	5.0	2.2	068	30	4.3	2.0	073	30	5.4	2.7	080
36 "	27	5.0	2.0	302	27	4.2	0.9	180	12	3.9	1.6	217	28	4.5	0.7	012	28	4.2	1.4	024	27	4.4	1.5	360
45 "	24	10.6	8.2	281	24	7.5	4.6	280	1	2.5	2.5	250	27	4.0	1.5	305	27	4.6	2.1	305	20	4.0	1.8	283
54 "	22	18.4	17.8	270	24	16.2	15.2	268					26	5.5	3.0	269	26	5.9	3.5	277	5	7.9	6.7	273
60 "	20	21.1	21.0	265	20	18.7	18.3	268					23	6.8	4.8	270	23	6.7	5.0	264	4	9.6	9.1	256
72 "	13	29.8	26.8	268	12	24.9	24.6	273					21	8.3	6.9	252	22	10.0	9.2	249	1	24.0	24.0	240
80 "	3	34.0	32.2	259	3	49.8	47.6	283					11	11.5	10.7	252	17	15.3	13.2	236				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa II—Magha II, 1964 Saka)

Station	GAUHATI																GAYA											
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.1	0.1	224	31	0.8	0.6	009	31	0.4	0.2	350	31	0.7	0.3	205	31	0.5	0.3	200	31	2.1	1.8	3				
0.15 a. g.	31	1.3	0.5	091	31	1.9	1.8	023	31	2.9	2.0	029	31	2.3	0.7	180	30	4.2	2.9	276	31	4.7	4.0	3				
0.3 a. m. s. l.	30	1.5	0.4	086	31	2.2	1.7	054	31	2.9	2.0	029	31	2.6	0.4	097	30	4.3	2.9	289	31	4.7	3.0	3				
0.6	30	2.7	1.5	076	31	2.9	2.2	079	31	2.3	1.1	028	31	3.2	1.1	069	30	4.9	3.4	316	31	4.5	3.9	3				
0.9	30	3.5	2.3	073	31	3.6	2.3	099	31	1.8	0.3	053	31	2.7	0.7	049	30	5.1	4.1	302	31	4.5	4.1	2				
1.5	30	3.9	2.4	071	31	4.6	2.3	117	31	2.6	1.7	218	31	2.9	0.1	023	30	6.9	6.3	297	31	6.6	5.6	2				
2.1	30	4.5	1.4	096	31	4.7	1.2	155	31	4.2	3.3	214	30	3.4	0.4	158	30	8.7	8.4	296	30	9.0	8.2	2				
3.0	30	7.9	5.9	283	31	8.1	4.4	279	31	6.7	5.4	264	27	6.5	3.5	269	25	10.9	10.3	295	29	11.3	10.7	2				
3.6	30	12.7	11.8	281	30	16.0	15.5	272	31	11.8	11.2	271	13	10.9	10.5	271	17	10.7	10.1	292	24	11.9	11.1	2				
4.5	30	18.0	17.5	269	27	19.5	17.8	268	31	18.3	18.0	272	7	14.9	14.7	268	9	12.9	12.0	276	12	12.8	12.6	2				
5.4	30	23.0	22.7	272	25	24.0	22.3	270	31	23.3	22.8	275	4	16.9	16.1	264	1	14.0	14.0	245	8	17.4	17.1	2				
6.0	28	24.8	24.3	273	21	26.0	25.7	263	31	27.8	27.0	275	2	23.3	21.2	266					6	22.4	22.1	2				
7.2	27	33.2	32.5	271	12	28.6	22.3	265	28	37.6	33.5	271									2	27.7	27.5	2				
9.0	14	44.2	43.5	265	4	47.5	46.1	265	15	46.0	42.2	268																

Station	GAYA				GOPALPUR												GORAKHPUR											
	2330				0530				1730				2330				0530				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.5	0.2	250	31	3.7	3.5	321	31	4.6	4.0	097	31	1.9	1.5	318	31	0.6	0.5	270	31	0.9	0.7					
0.15 a. g.	30	5.1	3.9	317	31	4.4	4.0	351	31	4.7	4.1	099	31	2.6	1.4	072	30	5.1	4.2	297	31	3.2	2.3					
0.3 a. m. s. l.	30	5.4	4.3	316	31	3.2	1.5	052	31	4.9	3.9	093	31	2.9	1.7	095	30	5.3	4.4	301	31	3.3	2.4					
0.6	30	5.9	4.9	305	31	3.3	1.8	083	31	4.1	2.7	056	31	3.4	2.1	084	30	5.0	3.4	301	31	4.1	3.1					
0.9	30	6.0	5.0	290	31	3.8	2.7	047	31	4.2	3.2	005	31	3.7	2.7	040	30	5.5	3.4	299	31	4.7	3.6					
1.5	30	7.3	6.4	289	31	4.8	3.8	021	31	5.3	4.5	345	31	4.5	3.7	358	29	6.7	4.2	297	30	6.4	3.8					
2.1	29	9.6	8.3	295	31	4.4	3.4	358	31	5.8	4.7	332	30	4.7	3.8	350	29	7.2	5.1	293	30	8.5	6.9					
3.0	21	9.4	8.9	293	30	6.0	4.5	301	31	5.7	4.8	313	29	5.0	3.9	298	28	10.1	9.5	288	30	11.0	10.5					
3.6					29	6.8	6.3	284	31	7.6	6.2	300	3	7.3	6.9	254	18	10.0	8.9	288	30	12.9	12.6					
4.5					25	9.4	8.9	274	31	9.9	9.1	277					14	12.2	11.7	284	30	14.9	11.1					
5.4					15	10.5	9.0	266	31	12.2	11.6	269					10	15.1	14.4	270	28	17.3	16.5					
6.0					13	13.7	12.9	260	28	14.3	12.5	268					7	17.1	16.6	268	24	18.0	17.3					
7.2					3	15.5	15.3	271	16	19.7	17.8	259					3	22.0	20.7	261	17	20.9	20.2					
9.0									7	24.6	24.4	246									10	28.1	27.2					

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	GWALIOR																IMPHAL/TULIHAL							
	0530				1130				1730				2330				0530				1130			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.5	0.0	360	31	1.2	0.3	018	31	1.3	0.9	350	31	0.1	0.1	185	31	0.4	0.4	052	31	0.4	0.1	210
0.15 a. g.	30	3.7	1.7	012	31	2.5	0.8	005	31	2.9	2.1	354	31	4.3	2.5	036	31	1.6	1.2	070	30	0.9	0.1	234
0.3 a. m. s. l.	30	3.2	1.1	353	31	2.4	0.8	356	31	2.8	2.2	008	31	3.5	2.1	042								
0.6 "	29	4.7	2.9	012	31	3.3	1.2	342	31	3.2	2.3	349	31	4.2	2.1	001								
0.9 "	29	4.6	2.9	342	30	4.0	2.0	322	31	3.4	2.2	326	31	4.2	2.5	314	31	1.6	1.4	063	30	1.0	0.1	190
1.5 "	29	5.6	4.6	309	29	5.1	3.7	303	31	4.8	4.1	299	30	4.9	4.4	303	31	2.3	0.7	027	31	2.8	1.5	193
2.1 "	29	7.1	6.2	289	29	5.9	5.0	286	31	6.8	6.2	286	30	6.2	5.6	294	28	4.8	2.8	234	31	5.2	3.7	235
3.0 "	28	8.9	8.0	281	29	8.3	7.8	273	30	9.9	9.1	284	30	8.5	7.8	285	24	10.2	9.6	276	27	10.1	9.0	279
3.6 "	25	9.7	8.9	278	29	10.2	9.4	273	30	11.2	10.3	280	15	8.7	7.7	282	13	12.6	12.3	275	18	11.5	10.8	268
4.5 "	25	12.4	11.5	276	28	13.2	12.1	275	30	13.4	12.7	278					10	15.9	15.5	277	12	17.1	16.9	268
5.4 "	25	16.7	15.3	275	28	16.1	14.9	275	30	16.3	15.6	275					3	17.5	17.5	287	6	22.9	22.5	269
6.0 "	25	19.3	18.1	272	28	18.7	17.7	275	30	19.2	18.3	274					2	18.3	18.3	282	3	21.7	21.2	270
7.2 "	23	25.0	23.8	272	24	24.5	24.0	269	28	25.8	25.0	274									1	26.0	26.0	285
9.0 "	13	31.3	30.4	273	12	30.3	30.0	268	14	34.1	33.7	263												

Station	IMPHAL/TULIHAL								JABALPUR								JAGDALPUR															
	1730				2330				0530				1730				2330				0530											
Time I. S. T.																																
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D								
Surface	31	2.1	1.6	286	31	1.1	0.7	032	31	0.3	0.2	105	31	1.0	0.7	030	31	0.2	0.1	076	31	0.2	0.1	335								
0.15 a.g.	31	2.9	2.2	275	31	1.7	0.4	001	31	4.1	3.1	070	31	3.0	2.6	014	31	5.3	4.2	051	31	3.0	2.5	046								
0.3 a.m.s.l.																																
0.6 "									31	4.9	3.8	064	31	3.0	2.6	017	31	5.6	4.3	051	31	1.1	0.9	048								
0.9 "	31	2.8	2.1	277	31	1.7	0.6	024	31	5.3	2.7	038	31	3.3	2.4	007	31	4.5	3.2	051	31	4.6	3.7	054								
1.5 "	31	2.4	1.8	245	30	2.6	1.3	231	31	5.7	3.2	309	31	4.6	3.6	318	31	4.1	1.7	310	31	4.9	4.3	023								
2.1 "	31	4.4	3.7	256	31	5.2	4.1	243	31	6.9	6.2	295	30	6.1	5.2	300	31	6.1	5.1	286	31	4.7	3.8	004								
3.0 "	29	9.9	9.0	266	29	9.7	9.1	272	28	8.2	7.5	285	30	8.9	8.0	291	29	7.9	7.3	289	31	5.4	4.3	335								
3.6 "	25	12.7	12.1	274	16	14.9	12.5	270	24	10.1	9.2	280	29	10.5	9.9	285	25	10.9	10.3	290	31	5.7	4.7	300								
4.5 "	16	17.7	17.4	275	4	15.0	14.7	270	22	12.9	11.9	276	27	13.3	12.9	279	4	12.1	12.0	283	27	8.4	8.0	279								
5.4 "	9	22.4	22.1	276	1	22.0	22.0	275	14	16.3	15.2	273	24	17.4	17.0	275	1	10.0	10.0	265	26	11.5	10.7	274								
6.0 "	7	29.7	29.9	274					11	17.5	16.4	275	22	20.5	20.0	272					24	13.6	12.9	260								
7.2 "	4	32.4	32.3	266					1	18.5	18.5	245	14	25.0	24.5	271					8	16.1	15.3	264								
9.0 "	1	41.5	41.5	275									2	42.5	42.5	243					4	17.3	16.9	259								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER												JAMSHEDPUR											
	1730				2330				0530				1730				2330				0530											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.4	1.1	028	31	0.3	0.2	078	31	1.4	1.1	076	31	1.7	0.4	355	31	1.4	1.1	079	31	1.1	0.9	2								
0.15 a.g.	31	2.9	2.2	032	31	5.5	4.2	062	31	5.0	3.8	073	31	2.5	0.6	355	31	4.4	2.7	079	31	3.6	3.0	3								
0.3 a. m. s. l.																					31	3.6	2.7	3								
0.6 "	31	2.1	1.6	033	31	3.4	2.6	070	31	4.9	2.8	074	31	2.6	0.5	360	31	4.2	2.8	082	31	3.8	2.7	3								
0.9 "	31	3.3	2.6	028	31	5.7	4.3	053	31	3.6	0.9	051	31	2.4	0.9	345	31	3.1	1.3	098	31	4.6	3.1	3								
1.5 "	31	3.2	2.7	016	31	3.3	2.1	020	31	4.5	3.3	306	31	3.1	1.9	325	31	3.1	1.9	310	31	6.5	5.4	3								
2.1 "	31	3.9	3.1	018	31	3.6	2.5	003	31	6.5	5.2	285	31	5.2	4.1	290	30	5.5	4.6	288	30	8.2	7.4	3								
3.0 "	31	5.4	3.6	360	30	5.8	4.2	316	30	7.2	6.3	277	30	8.3	7.5	280	29	7.2	6.2	285	29	9.6	8.9	2								
3.6 "	31	6.3	5.5	293	8	7.6	6.2	392	26	9.6	9.0	274	30	10.6	9.7	277	24	8.1	7.0	278	23	11.0	9.8	2								
4.5 "	31	9.4	8.8	281	2	5.3	4.8	286	2	7.7	4.9	330	29	13.9	12.8	275	11	12.6	11.8	272	11	13.8	13.0	2								
5.4 "	30	11.9	11.1	271	1	8.5	8.5	245					27	17.0	15.3	277	2	14.5	13.9	274	4	19.0	18.1	2								
6.0 "	28	14.3	13.5	270	1	12.5	12.5	225					23	18.6	17.4	273																
7.2 "	9	20.4	19.4	265									7	17.9	16.6	280																
9.0 "	2	28.0	27.7	254									2	29.5	26.3	290																

Station	JAMSHEDPUR				JHARSUGUDA												JODHPUR											
	1730				0530				1730				2330				0530*				1130							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.3	1.1	328	31	1.7	1.5	019	31	1.4	0.5	331	31	0.6	0.3	042	31	3.2	3.1	035	31	2.4	2.2					
0.15 a.g.	31	2.6	1.8	341	31	5.5	5.2	040	31	2.0	0.6	336	31	3.1	0.4	208	31	6.1	5.5	048	30	3.7	2.6					
0.3 a. m. s. l.	31	2.6	1.7	341	31	5.1	4.9	039	31	2.2	0.7	343	31	2.7	0.3	028	31	5.1	4.7	050	30	3.1	2.5					
0.6 "	31	2.9	1.9	330	31	4.0	2.6	035	31	2.1	0.9	320	31	2.7	0.8	210	31	4.9	4.1	048	30	4.4	3.4					
0.9 "	31	3.5	2.6	318	31	3.1	1.9	358	31	2.3	1.3	321	31	2.7	1.1	279	31	3.7	1.9	044	31	4.7	2.9					
1.5 "	31	6.7	5.6	310	31	4.2	2.9	324	31	3.9	3.1	328	30	3.3	1.9	337	31	3.7	2.4	322	31	3.6	1.1					
2.1 "	31	8.6	7.5	302	31	6.1	5.2	311	31	6.2	5.3	323	30	5.5	4.5	316	31	5.0	3.8	288	31	3.7	1.9					
3.0 "	31	11.1	10.5	295	31	7.9	7.3	300	31	8.9	8.3	304	30	7.8	7.2	298	31	6.6	4.6	264	31	6.9	5.6					
3.6 "	28	12.6	12.0	290	28	9.5	7.8	293	31	10.1	9.9	294	16	8.6	8.5	288	29	8.7	6.8	268	31	9.3	8.1					
4.5 "	26	16.4	16.0	276	24	12.3	11.6	278	29	13.8	13.3	280					28	12.3	10.8	268	31	12.6	11.3					
5.4 "	15	20.5	19.7	266	10	13.5	12.3	275	27	16.3	15.7	270					27	16.8	15.3	268	31	16.5	14.9					
6.0 "	7	21.6	21.0	260	1	14.0	14.0	245	23	20.3	19.7	269					27	18.5	17.1	265	30	18.9	17.3					
7.2 "									7	25.1	24.3	258					27	24.6	23.0	262	23	22.2	19.1					
9.0 "									3	23.7	23.7	252					23	40.0	37.4	260	6	25.2	23.6					

TABLE IV.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI								MADRAS/MINAMBAKKAM											
	1730*				2330				0530				1730				2330*				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.6	2.2	042	31	3.0	2.6	030	31	1.9	1.5	282	31	2.4	1.6	295	31	1.9	1.5	271	31	2.5	2.3	026				
0.15 a. g.	29	4.7	4.3	027	31	7.7	6.5	050	29	5.4	5.1	314	30	3.7	3.1	294	29	6.5	6.0	297	31	7.0	6.8	035				
0.3 a. m. s. l.	29	4.4	3.7	028	31	7.7	6.5	050	29	5.7	5.0	320	30	3.9	3.5	290	29	6.6	6.0	301	31	6.9	6.7	041				
0.6 "	29	4.0	3.3	027	31	6.8	5.8	044	29	5.6	4.8	311	30	4.4	3.7	292	29	5.9	5.5	308	31	6.8	6.5	053				
0.9 "	29	3.7	2.6	032	31	6.7	5.5	051	29	5.5	4.6	308	30	6.6	4.7	303	29	5.3	4.5	316	31	6.9	6.4	061				
1.5 "	29	3.1	1.1	035	31	5.3	3.8	062	29	6.8	6.0	301	29	6.3	5.8	304	29	6.3	5.3	306	31	6.8	6.1	068				
2.1 "	29	3.8	1.8	280	31	3.5	0.2	155	28	7.9	6.9	300	30	7.6	7.3	301	29	7.3	6.5	299	31	6.2	5.4	077				
3.0 "	28	6.3	5.2	270	31	4.7	3.5	270	24	8.9	8.1	295	30	9.0	8.7	293	22	7.7	6.8	298	31	4.9	3.5	072				
3.6 "	28	8.6	7.4	272	31	6.8	5.6	275	9	8.7	8.1	290	30	10.9	10.3	287	8	7.7	7.0	297	30	5.1	2.8	070				
4.5 "	27	13.3	11.8	268	20	8.4	6.6	276	5	10.1	9.8	287	30	13.9	13.3	280					30	4.1	0.9	094				
5.4 "	27	16.9	14.5	267	2	6.0	6.0	272	1	4.0	4.0	285	28	16.7	15.7	281					28	4.8	0.7	084				
6.0 "	27	18.5	16.7	265	1	7.0	7.0	290	1	12.5	12.5	300	28	19.0	18.6	275					28	4.9	0.5	192				
7.2 "	27	25.3	22.8	263	1	9.5	9.5	285					19	21.6	21.1	271					28	6.8	3.7	211				
9.0 "	25	35.6	33.6	260									7	24.8	24.2	276					27	9.1	6.7	205				

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE															
	1130				1730*				2330				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.4	3.8	024	31	5.1	4.5	031	31	2.8	2.5	018	31	2.2	2.1	090	31	3.5	3.2	273	31	0.9	0.5	003				
0.15 a. g.	30	6.3	6.0	042	31	8.4	8.2	043	31	7.3	7.1	042	31	7.3	6.8	097	31	5.0	4.4	277	31	4.0	3.1	340				
0.3 a. m. s. l.	30	6.9	6.7	044	31	8.2	7.9	042	31	8.0	7.9	045	31	8.0	6.8	098	31	4.7	4.1	283	31	4.1	3.1	335				
0.6 "	28	7.2	7.1	084	31	7.5	7.1	044	31	8.6	8.4	049	31	7.0	6.5	095	31	2.5	1.3	323	31	4.5	3.0	352				
0.9 "	27	7.6	4.1	050	31	7.3	6.8	050	31	8.9	8.3	050	31	6.1	5.3	094	31	3.0	2.0	068	31	4.3	2.7	030				
1.5 "	15	7.8	7.3	057	31	6.8	6.0	061	30	7.6	6.7	049	31	4.7	3.6	102	31	5.4	5.0	083	29	6.3	5.9	084				
2.1 "	10	6.7	5.7	051	31	6.5	4.8	067	27	6.8	5.8	055	31	4.4	2.4	103	30	7.2	6.6	080	28	7.1	5.7	095				
3.0 "	7	4.3	2.1	065	31	5.5	3.8	074	20	5.5	3.9	064	31	5.0	2.8	080	28	4.9	3.6	071	28	5.6	4.9	083				
3.6 "	6	3.7	1.9	056	31	5.0	2.5	070	16	4.3	1.5	025	28	5.5	3.9	078	28	4.2	2.1	049	20	4.2	1.9	060				
4.5 "	3	3.5	1.2	325	31	4.6	2.1	075	12	4.4	1.2	005	26	4.4	1.5	096	26	4.1	1.6	360	9	3.2	0.6	329				
5.4 "	3	5.2	2.0	010	31	4.3	1.0	350	7	5.6	0.9	125	22	4.3	1.0	050	25	4.8	0.7	303	4	5.1	2.2	226				
6.0 "	2	8.8	1.1	211	30	5.5	0.5	233	6	6.8	3.5	213	21	5.1	1.4	309	23	5.4	2.5	281	4	6.4	2.0	244				
7.2 "	2	11.8	4.4	226	29	6.9	4.0	232	3	11.3	10.8	218	20	6.7	3.2	228	19	8.2	6.6	245								
9.0 "					26	10.5	8.5	217					7	11.1	10.3	250	11	12.6	10.7	234								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa II—Magha II, 1884 Saka)

Station	MINICOY												NAGPUR/SONEGAON															
	0530				1730				2330				0530*				1130				1730*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.4	0.9	054	31	1.7	1.0	045	31	1.7	1.0	054	31	0.8	0.8	011	31	1.9	1.5	056	31	0.5	0.4					
0.15 a. g.	30	4.0	2.4	049	31	4.7	3.5	042	31	4.0	2.9	050	31	5.0	3.3	068	31	2.5	1.6	054	31	2.6	1.7					
0.3 a. m. s. l.	30	4.0	2.5	045	31	4.8	3.7	038	31	4.0	2.9	063																
0.6 "	30	4.4	3.0	053	31	4.8	3.4	045	31	4.3	3.1	057	31	4.8	4.5	056	31	3.3	2.1	081	31	2.7	1.8					
0.9 "	30	4.8	3.6	068	31	4.6	3.5	052	31	4.6	3.7	075	31	4.4	2.4	085	31	3.3	1.1	094	31	2.9	1.7					
1.5 "	27	5.0	3.8	074	30	5.1	3.3	071	31	4.9	4.1	073	31	3.4	0.7	243	31	3.3	0.8	314	31	3.1	1.4					
2.1 "	24	4.7	2.4	077	28	4.7	2.7	087	29	5.5	4.3	075	31	5.6	3.4	288	30	4.7	3.2	303	31	4.9	3.2					
3.0 "	23	4.9	1.6	066	22	5.3	2.5	064	28	5.6	3.1	070	31	7.4	6.4	288	29	7.7	6.5	283	31	6.8	5.5					
3.6 "	23	4.7	2.2	065	21	4.8	2.6	066	18	4.5	2.3	028	31	9.2	8.1	279	29	9.0	8.0	278	31	8.9	7.8					
4.5 "	21	4.6	2.4	065	20	4.3	2.7	067	13	3.8	2.6	040	31	11.6	11.0	275	28	12.5	11.7	269	31	12.8	11.9					
5.4 "	19	5.4	1.1	077	18	4.7	2.2	068	5	4.4	1.5	013	31	15.4	14.0	268	28	16.0	14.9	265	31	15.4	14.5					
6.0 "	18	5.6	1.6	104	18	5.7	2.0	095	4	4.1	0.7	308	29	18.0	17.2	267	27	18.3	17.6	265	31	17.8	17.1					
7.2 "	16	5.0	2.0	191	12	6.5	2.4	208					29	22.0	21.4	258	24	21.6	20.8	264	31	21.6	21.0					
9.0 "	11	8.8	4.8	182	11	8.5	5.3	198					29	30.1	29.3	249	11	30.8	30.2	251	31	30.5	30.0					

Station	NAGPUR/SONEGAON				NEW DELHI/SAFDARJUNG												POONA										
	2330				0530*				1130				1730*				2330				0530						
Time in I.S.T.																											
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v
Surface	31	1.0	0.7	030	31	1.8	1.7	322	31	2.7	2.1	303	31	1.7	1.5	315	31	1.3	0.9	255	31	C	A	L			
0.15 a. g.	31	5.3	4.3	083	31	6.2	5.2	332	30	4.3	2.9	313	30	4.8	4.0	326	31	6.1	4.5	325	31	3.3	2.7				
0.3 a. m. s. l.					31	5.5	4.8	332	30	3.5	2.6	319	30	4.5	3.7	325	31	5.4	3.8	331							
0.6 "	31	4.9	4.0	088	31	6.3	5.5	326	30	5.6	3.9	315	30	4.4	3.7	321	31	6.2	5.5	322	31	1.3	0.3				
0.9 "	31	3.8	2.7	092	31	6.9	5.8	320	30	6.7	3.9	314	30	4.5	4.0	315	31	6.3	5.2	315	31	4.5	4.0				
1.5 "	31	3.4	0.7	006	31	6.6	6.1	311	29	6.4	5.8	311	30	5.8	4.5	309	31	5.6	5.0	302	31	5.3	4.3				
2.1 "	30	4.6	2.6	299	31	6.5	5.2	312	29	6.1	4.9	300	30	6.3	5.2	299	30	5.5	4.6	299	31	3.4	1.7				
3.0 "	29	6.0	4.9	277	31	6.9	5.8	289	29	7.6	6.6	282	30	6.7	5.7	295	27	6.6	5.3	289	31	4.8	2.1				
3.6 "	20	8.0	7.3	275	31	7.7	6.6	286	29	8.6	7.9	278	30	8.1	7.0	290	5	8.1	7.4	307	28	5.7	2.6				
4.5 "	3	12.7	12.3	283	31	10.5	8.8	282	28	11.7	9.9	280	30	11.2	10.0	282	3	9.5	7.8	306	18	8.4	7.4				
5.4 "	2	11.5	11.1	270	31	14.9	13.4	279	27	13.5	11.8	276	30	14.1	12.7	280	1	9.0	9.0	305	5	10.4	9.4				
6.0 "					31	16.1	14.9	277	27	14.9	12.8	275	30	16.3	14.8	268	1	10.0	10.0	290	1	4.0	4.0				
7.2 "					31	23.6	21.8	273	12	17.8	15.5	276	30	22.1	20.7	273											
9.0 "					30	33.7	31.6	267	2	10.6	10.5	285	29	34.7	3.25	266											

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	POONA								PORT BLAIR															
	1730				2330				0530*				1130				1730*				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.2	0.1	278	31	CALM			31	3.5	3.3	065	31	4.0	3.8	066	31	2.8	2.7	065	31	4.5	4.2	071
15 a.g.	31	2.5	1.3	067	31	4.1	1.4	073	31	7.7	7.4	070	31	7.2	6.9	069	31	7.7	7.4	073	31	8.1	7.8	074
3 a.m.s.l.									31	7.7	7.4	070	31	7.3	7.1	072	31	7.7	7.5	073	31	8.1	7.8	075
6 "	31	9.4	0.5	065	31	1.5	0.4	179	31	7.8	7.6	077	31	7.7	7.3	076	31	7.3	7.1	074	30	7.9	7.6	077
9 "	31	2.5	1.1	070	31	5.3	2.5	065	31	8.0	7.5	084	29	7.7	7.4	081	31	7.7	7.5	079	27	7.8	7.6	084
15 "	31	2.5	1.2	091	31	5.3	4.0	101	31	7.1	6.5	092	20	6.3	4.9	082	30	6.8	5.5	093	22	6.9	6.3	080
21 "	31	3.0	1.3	129	31	4.6	3.7	115	31	6.0	1.2	092	16	5.1	2.4	074	30	5.7	3.4	084	12	4.7	3.5	095
30 "	30	3.5	0.8	162	30	4.6	2.0	179	31	4.3	1.4	106	13	4.2	1.1	110	30	3.5	1.8	106	7	4.9	3.8	090
36 "	28	4.3	1.8	271	25	5.0	1.9	256	31	4.4	2.5	113	11	4.5	1.3	083	30	4.2	2.3	100				
45 "	25	6.9	5.6	271	10	8.4	7.1	275	31	4.8	3.2	098	11	4.1	3.0	077	31	5.1	3.0	112				
54 "	24	10.7	9.2	266	5	11.3	10.4	260	30	6.0	4.3	098	9	5.1	4.6	088	31	5.6	4.2	109				
60 "	24	12.3	11.1	266	3	13.5	13.5	265	30	6.3	4.2	105	8	6.1	4.3	084	31	6.3	4.5	107				
72 "	21	15.5	14.8	266					30	6.9	5.1	126	6	5.8	5.3	105	31	6.6	4.6	128				
80 "	17	22.7	21.4	243					23	8.5	6.3	163	1	8.0	8.0	205	23	7.2	4.9	161				

Station	RAIPUR								RAXAUL								SILIGURI/ BAGHDGRA							
	0530				1730				2330				0630				1730				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.4	0.3	044	31	1.3	1.0	010	31	0.8	0.6	078	31	CALM			31	0.9	0.8	250	31	0.6	0.5	020
0.15 a.g.	31	4.3	3.5	052	31	2.3	1.7	009	31	3.6	2.4	070	25	3.0	2.2	310	30	4.2	3.9	285	30	2.6	1.8	044
0.3 a.m.s.l.													25	3.1	2.4	305	30	4.2	3.9	257	30	2.6	2.0	065
0.6 "	31	4.3	2.9	059	31	2.4	1.7	019	31	3.4	2.3	073	25	3.0	1.7	280	30	4.2	3.7	261	30	2.5	2.0	077
0.9 "	31	3.4	1.9	043	31	2.8	2.0	018	31	2.9	1.6	039	25	3.0	0.7	285	30	3.4	2.3	261	30	2.5	1.7	089
1.5 "	31	4.1	2.9	334	31	4.2	3.0	347	31	3.9	2.9	339	25	5.6	1.1	293	30	4.5	1.1	302	30	5.2	2.5	082
2.1 "	31	5.5	4.5	316	31	5.6	4.5	322	31	4.7	3.5	317	24	8.2	4.1	290	30	7.1	3.0	305	30	4.8	2.4	087
3.0 "	31	6.9	6.0	296	31	7.4	6.4	301	30	7.0	6.1	299	21	7.9	7.3	283	28	9.3	8.1	287	30	8.4	5.6	285
3.6 "	31	8.6	8.0	289	29	8.9	7.9	285	11	7.9	7.1	289	19	9.2	8.7	286	25	9.6	9.0	287	26	12.2	11.5	282
4.5 "	25	11.6	11.2	276	29	12.1	11.4	276					18	11.4	10.7	283	23	12.2	11.9	285	20	16.0	13.7	278*
5.4 "	18	14.1	12.9	264	28	15.4	14.6	270					15	12.8	12.2	278	18	14.6	14.0	280	11	16.9	14.0	268
6.0 "	13	16.6	15.3	260	27	17.4	16.7	270					9	10.8	10.5	272	18	15.2	14.6	282	6	16.8	12.2	268
7.2 "					15	22.6	21.6	266					8	16.9	16.2	271	3	16.7	16.7	257	1	23.5	23.5	280
9.0 "					1	26.0	26.0	255									1	20.0	20.0	260				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa II—Magna II, 1884 Saka)

Station	SILIGURI/BAGHDUGRA				SRINAGAR				TIRUCHCHIRAPPALLI																							
	1730				2330				0530*				1730*				0530				1730											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.2	1.0	222	31	1.0	0.7	342	30	1.0	0.3	113	30	0.4	0.3	359	31	3.0	2.7	008	31	3.9	3.5	0								
0.15 a.g.	31	3.1	2.8	226	31	3.1	2.6	296	30	0.9	0.2	032	30	1.1	0.1	266	29	7.6	7.5	022	26	6.4	6.2	0								
0.3 a.m.s.l.	31	3.2	2.9	227	31	3.2	2.7	291					29	8.6	8.6	027	26	6.9	6.6	0												
0.6 "	31	2.6	2.2	232	31	3.5	3.1	283					29	9.4	9.1	042	25	7.5	7.3	0												
0.9 "	31	2.3	1.7	231	31	2.1	0.7	282					29	8.8	8.4	046	25	7.6	7.3	0												
1.5 "	31	2.0	0.3	039	31	2.8	2.1	105					25	6.5	5.7	051	25	7.3	7.0	0												
2.1 "	31	3.4	0.9	038	31	2.8	2.0	094	28	0.7	0.3	118	30	1.2	0.8	110	24	5.5	4.5	060	23	6.8	5.9	0								
3.0 "	28	8.4	6.3	295	24	7.7	6.5	290	29	1.4	0.3	090	30	1.7	0.4	135	20	4.5	2.6	071	20	4.9	3.4	0								
3.6 "	28	13.0	11.8	281	10	13.9	13.1	284	29	3.0	1.6	138	30	2.7	1.5	141	18	3.9	2.4	068	20	4.0	2.7	0								
4.5 "	26	16.2	15.8	284					30	4.1	1.2	176	29	4.3	2.7	167	18	4.0	2.6	058	18	4.4	2.4	0								
5.4 "	21	20.0	19.1	288					30	7.0	2.7	259	29	6.8	3.3	237	16	5.6	1.5	043	16	4.7	2.1	0								
6.0 "	16	20.4	19.7	286					30	8.9	5.3	271	28	9.4	5.6	256	16	6.3	1.0	124	16	5.9	1.4	0								
7.2 "	5	26.7	24.7	281					30	13.2	8.7	264	27	14.0	9.1	266	13	6.7	3.1	163	14	7.9	3.3	2								
9.0 "	2	43.7	43.5	283					25	19.8	16.9	273	25	20.8	16.5	270	11	9.0	5.9	183	13	10.0	6.8	2								

Station	TIRUCHCHIRAPPALLI				TRIVANDRUM				UDAIPUR																			
	2330				0530*				1130				1730*				2330				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	3.2	3.1	046	31	1.9	1.5	046	31	1.0	0.4	360	31	1.5	1.1	254	31	1.1	0.5	343	31	C	A	L				
0.15 a.g.	29	8.6	8.4	049	31	3.4	1.9	047	30	1.9	0.5	041	31	3.3	2.1	254	31	3.0	1.4	283	31	2.5	2.3	0				
0.3 a.m.s.l.	29	9.8	9.6	049	31	3.3	1.7	051	30	1.8	0.3	056	31	3.3	1.9	254	31	3.0	1.5	278								
0.6 "	29	10.8	10.5	049	31	3.1	1.8	065	30	2.3	1.7	047	31	3.4	0.4	007	31	2.7	0.8	352								
0.9 "	28	9.7	9.4	047	31	4.4	2.8	068	30	3.5	2.9	046	31	4.8	3.3	048	31	3.5	2.8	055	31	3.2	2.0	0				
1.5 "	26	7.0	6.4	048	31	5.6	2.9	058	27	4.2	3.0	037	31	6.2	5.3	058	31	5.1	4.9	062	31	4.6	0.5	0				
2.1 "	23	5.9	4.3	057	31	6.0	3.3	072	25	4.2	2.7	056	31	5.9	4.9	068	27	5.1	2.4	057	31	4.8	2.9	0				
3.0 "	22	4.4	3.1	070	31	5.4	3.5	085	22	4.7	3.2	058	31	6.1	3.5	070	23	3.6	2.2	080	30	6.5	5.3	0				
3.6 "	17	4.2	2.1	051	31	6.5	4.1	085	20	4.7	2.8	063	31	6.9	3.3	072	19	4.4	2.1	068	29	7.9	6.4	0				
4.5 "	15	4.4	2.7	063	30	6.2	4.1	073	17	5.0	3.5	068	31	6.0	3.6	069	12	3.9	3.0	073	29	11.5	10.1	0				
5.4 "	6	5.0	2.1	263	30	6.7	3.9	081	16	5.9	3.5	069	31	6.9	4.8	055	9	5.4	4.0	063	27	15.7	14.4	0				
6.0 "	5	6.5	4.2	265	30	7.5	4.6	091	16	6.8	3.5	075	31	7.4	4.3	065	7	4.9	3.6	074	20	16.2	14.8	0				
7.2 "	5	10.2	8.0	227	30	8.7	4.8	124	15	8.3	4.6	108	01	8.8	3.9	123	3	5.2	3.8	218	5	16.5	15.2	0				
8.0 "	2	16.3	16.1	242	29	8.9	5.6	147	14	9.0	4.5	142	31	10.2	5.4	161	2	7.0	4.9	127								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

January, 1963 (Pausa II—Magha II, 1884 Saka)

Station	UDAIPUR								VENGURLA												VERAVAL							
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.4	0.2	015	31	0.2	0.1	346	31	0.8	0.6	020	31	2.0	1.8	264	31	0.6	0.6	004	31	4.4	3.9	029				
0.15 a.g.	31	2.6	1.3	090	31	3.1	2.5	049	31	3.5	2.9	070	31	3.5	2.8	263	31	4.3	4.2	008	31	9.3	8.6	041				
0.3 a.m.s.l.									31	4.4	3.5	090	31	3.7	2.7	265	31	4.9	4.5	002	31	7.6	6.6	048				
0.6 "									31	5.2	4.3	106	31	2.8	0.3	350	31	4.8	3.7	011	31	5.4	4.0	049				
0.9 "	31	2.7	1.3	070	31	3.9	3.2	061	31	5.5	4.5	115	31	3.1	2.1	067	31	4.6	3.2	049	31	4.3	2.1	055				
1.5 "	31	2.7	0.3	015	31	3.6	1.4	126	31	4.7	3.8	119	31	6.0	5.5	079	31	5.7	5.1	091	31	3.8	0.1	234				
2.1 "	31	3.9	2.7	274	31	4.2	2.5	251	31	3.7	2.8	116	31	7.1	6.5	080	31	6.0	5.7	093	31	5.4	2.2	214				
3.0 "	31	7.6	6.6	271	31	7.5	6.6	265	29	4.3	1.5	102	31	5.0	3.1	071	29	4.7	3.4	087	30	5.8	3.2	264				
3.6 "	30	10.5	8.8	274	17	8.4	8.3	275					29	3.8	1.0	039	15	3.1	0.7	130	15	8.1	6.8	262				
4.5 "	29	13.2	11.6	277	3	8.5	7.5	305					28	4.3	2.2	281	1	4.5	4.5	215	4	12.4	11.8	261				
5.4 "	29	16.1	14.6	277									28	6.9	4.9	268					1	13.0	13.0	230				
6.0 "	28	18.3	16.8	273									28	7.6	5.8	258					1	18.0	18.0	245				
7.2 "	22	23.7	22.4	275									19	9.6	9.0	258												
9.0 "	2	17.5	13.2	291									3	18.3	18.3	239												

Station	VERAVAL								VIJAYWADA/GANNAVARAM												VISHAKHAPATNAM							
	1730				2330				0530				1730				2330				0530*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	3.7	1.3	264	31	1.9	1.6	014	31	2.7	2.6	045	31	2.8	2.0	093	31	2.2	2.2	079	31	3.3	2.9	015				
0.15 a.g.	31	5.0	1.5	238	31	5.3	4.0	007	31	6.2	6.2	071	31	3.7	3.0	100	31	6.9	6.8	100	31	7.7	7.6	022				
0.3 a.m.s.l.	31	4.6	1.0	249	31	5.7	4.1	018	31	5.7	5.6	089	31	4.1	3.5	092	31	7.3	7.2	101	31	6.8	6.5	037				
0.6 "	31	3.6	1.2	357	31	5.3	3.8	034	31	5.7	5.5	096	31	4.3	3.8	081	31	6.6	6.5	094	31	5.4	5.0	053				
0.9 "	31	3.7	2.1	008	31	4.5	3.2	054	31	5.4	4.5	077	31	4.2	3.6	068	31	5.4	5.0	077	31	5.4	4.9	053				
1.5 "	31	3.7	2.3	021	31	3.8	2.4	090	31	5.8	5.1	058	31	5.4	4.4	046	31	5.8	4.6	050	31	5.9	4.6	046				
2.1 "	31	4.4	1.3	313	31	4.1	0.7	173	31	5.5	4.2	053	30	5.9	4.8	038	31	5.9	4.8	050	31	5.2	3.9	024				
3.0 "	30	6.0	4.1	266	31	6.5	3.7	250	31	4.7	1.7	330	29	4.4	2.5	019	31	4.3	1.5	020	31	4.6	2.9	330				
3.6 "	29	8.1	6.3	267	19	7.6	5.9	254	31	4.2	1.0	307	29	4.8	2.1	309	27	5.0	2.3	301	31	5.3	3.9	295				
4.5 "	29	11.5	10.2	264	11	9.5	7.4	270	30	5.6	3.2	281	27	5.9	4.4	279	21	6.0	4.7	278	31	7.0	6.2	275				
5.4 "	29	14.5	13.2	260					28	6.3	5.3	264	26	7.1	5.8	263	17	6.9	5.1	273	31	9.3	8.3	265				
6.0 "	29	17.2	15.9	261					27	7.9	7.0	251	26	8.5	7.6	261	14	8.2	6.4	267	30	11.2	10.0	257				
7.2 "	29	22.0	20.6	262					22	12.3	11.4	249	26	12.9	12.2	249	6	12.7	12.2	246	29	14.2	13.6	246				
9.0 "	21	29.4	27.8	261					12	17.0	16.7	246	20	17.9	17.3	240					28	19.9	19.5	240				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

Station	VISHAKHAPATNAM											
	1130				1730*				2330			
Time in I.S.T.												
Hr. in Km.	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.7	2.2	075	31	4.0	3.6	044	31	0.2	0.1	360
0.15 a.g.	31	3.8	3.1	080	31	7.2	6.7	047	31	3.0	2.9	063
0.3 a.m.s.l.	31	3.5	3.1	075	31	7.0	6.7	055	31	3.7	3.5	078
0.6 „	31	3.6	3.1	062	31	6.7	6.0	067	31	4.4	4.3	080
0.9 „	31	4.2	3.8	052	31	6.2	5.5	048	31	4.5	4.3	060
1.5 „	30	5.3	4.7	044	31	5.7	5.0	014	30	5.4	4.7	026
2.1 „	29	5.3	4.4	030	31	6.1	5.0	002	29	5.8	4.4	028
3.0 „	29	4.6	2.9	333	31	5.4	3.0	335	29	4.1	1.9	318
3.6 „	26	4.8	3.4	298	30	6.0	4.3	302	23	5.3	3.1	275
4.5 „	21	6.1	4.9	277	30	7.4	6.0	282	18	7.3	6.3	272
5.4 „	19	7.6	6.3	260	30	9.3	8.2	265	13	9.7	9.2	263
6.0 „	19	9.1	8.0	256	30	10.6	9.7	258	11	12.5	11.7	264
7.2 „	17	12.0	11.3	250	30	13.7	13.5	252	3	14.2	13.7	246
9.0 „	13	16.2	15.7	240	28	20.4	19.4	238				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9 km. above mean sea level

January, 1963 (Pausa 11—Magha 11, 1884 Saka),

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v						
	AGARTALA					BAHRAICH					BIKANER					1730 hr.					LUCKNOW/AMAUSI			
	1730 hr.					0530 hr.					1730 hr.				10.5	13	14.5	13.5	237		1730 hr.			
10.5	2	44.0	43.9	250	10.5	1	44.5	44.5	250	10.5	1	13.0	13.0	265	12.0	11	14.3	13.0	235	10.5	3	38.5	26.0	243
						1130 hr.									14.1	9	16.2	13.6	215					
															16.2	8	9.9	7.8	222					
	AHMADABAD				12.0	3	39.6	39.4	254						18.0	7	11.1	8.8	214		MADRAS/MINAM-BAKKAM			
	0530 hr.*														21.0	6	7.6	2.7	202		0530 hr.*			
10.5	9	39.9	38.9	258		BANGALORE					BOMBAY/SANTA CRUZ				24.0	1	14.0	14.0	080	10.5	26	12.6	9.1	205
12.0	6	46.5	45.0	258		0530 hr.@					0530 hr.*					GAUHATI				12.0	25	12.6	9.8	201
14.1	2	54.3	54.0	265	10.5	10	13.5	11.0	213	10.5	23	28.6	24.6	250		0530 hr.*				14.1	12	10.7	6.9	224
	1130 hr.				12.0	9	16.6	14.8	203	12.0	17	32.3	28.8	256	10.5	7	62.8	61.7	260					
10.5	1	53.0	53.0	260	14.1	8	16.4	13.7	220	14.1	7	27.7	18.8	254	12.0	2	49.0	48.7	266					
	1730 hr.*				16.2	7	12.4	7.3	222		1130 hr.				14.1	1	48.0	48.0	285		5 9.1 7.4 156			
10.5	17	40.7	35.0	252	18.0	3	7.5	5.3	140	10.5	11	29.7	28.6	248		1130 hr.				16.2	1	11.5	11.5	265
12.0	8	40.3	39.4	256	21.0	2	12.0	10.9	049	12.0	3	29.6	28.2	247	10.5	1	53.5	53.5	275		1730 hr.*			
14.1	3	39.6	38.5	247		1130 hr.				14.1	5	32.1	29.3	229		1730 hr.*				18.0	22	13.5	11.2	206
16.2	1	33.5	33.5	250	10.5	11	9.9	7.2	208		1730 hr.*				10.5	4	56.8	56.5	265		10.5 23 16.0 12.6 197			
18.0	1	14.5	14.5	360	12.0	5	10.9	8.5	211	10.5	27	29.7	28.5	255		GORAKHPUR				12.0	15	13.0	8.6	215
					14.1	3	16.8	8.3	169	12.0	20	31.1	29.2	253		1730 hr.				14.1	5	11.1	10.0	203
						1730 hr.@				14.1	6	30.0	29.0	260	10.5	5	43.8	43.0	250	16.2	1	6.5	6.5	265
	ALLAHABAD/BAMHRAULI				10.5	16	12.0	10.7	220		CALCUTTA/DUM DUM					GWALIOR				18.0	MANGALORE/BAJPE			
	0530 hr.*				12.0	15	13.8	11.2	219		0530 hr.*				10.5	3	47.7	46.2	259		0530 hr.			
10.5	15	44.2	44.0	258	14.1	11	14.5	11.1	200	10.5	25	36.2	35.2	249	10.5	4	41.1	41.0	256	10.5	4	11.6	11.6	242
12.0	5	50.3	46.1	255	16.2	8	7.5	1.2	178	12.0	23	37.4	37.0	253		1730 hr.				12.0	1	13.5	13.5	225
	1730 hr.*				18.0	4	4.9	1.6	094		1730 hr.*				14.1	6	26.4	25.2	251		1730 hr.			
10.5	11	50.6	40.9	257	21.0	2	6.5	5.9	080	10.5	19	33.5	32.6	252	10.5	20	41.1	39.0	255	10.5	8	14.7	12.5	231
12.0	2	51.3	51.0	253		BEGAMPET				14.1	7	28.2	27.7	252	12.0	15	43.5	41.5	257	12.0	4	16.5	15.1	232
						0530 hr.				16.2	2	26.7	26.4	259	14.1	8	38.3	36.7	258	14.1	3	15.7	11.1	214
	AMBALA				10.5	10	19.2	18.1	240		1730 hr.*					JODHPUR					0530 hr.*			
	1130 hr.				12.0	5	19.1	17.4	223	10.5	19	33.5	32.6	252	12.0	20	41.1	39.0	255	10.5	20	41.1	39.0	255
10.5	3	31.0	29.1	272	14.1	3	18.7	17.6	238	12.0	17	35.1	34.5	253	14.1	8	38.3	36.7	258	12.0	4	16.5	15.1	232
12.0	1	44.5	44.5	280	16.2	3	12.7	12.2	235	14.1	7	28.2	27.7	252	16.2	4	23.4	22.8	266	14.1	3	15.7	11.1	214
	1130 hr.				18.0	3	9.2	6.7	245	16.2	2	27.5	27.5	250	18.0	3	20.0	19.0	270		1730 hr.			
10.5	1	82.0	82.0	250		1730 hr.					DEHRADUN				21.0	1	3.5	3.5	290		MINICOY			
					10.5	9	21.4	20.8	240		1730 hr.					1130 hr.					0530 hr.			
	ANANTAPUR				12.0	8	21.9	21.5	235	10.5	19	33.5	32.6	252	10.5	3	33.0	31.7	279	10.5	9	9.7	7.1	140
	0530 hr.				14.1	2	16.5	16.5	258	10.5	2	25.7	25.7	260	12.0	1	40.0	40.0	260	12.0	4	9.3	8.2	180
10.5	3	10.7	9.5	215	16.2	1	9.0	9.0	310	12.0	1	27.0	27.0	265		1730 hr.*				14.1	1	5.5	5.5	200
12.0	3	11.2	10.5	211		BHUJ/RUDRAMATA					GADAG					1730 hr.*					1730 hr.			
	1730 hr.					1730 hr.				10.5	8	13.4	12.4	238	10.5	15	40.2	38.3	256	10.5	8	7.1	5.6	183
10.5	6	14.2	13.6	220	10.5	5	43.8	43.3	257	10.5	8	13.4	12.4	238	12.0	11	44.9	47.3	255	10.5	8	7.1	5.6	183
12.0	3	16.0	12.4	213	12.0	2	36.7	36.6	261	12.0	7	16.4	14.3	228	14.1	6	35.6	35.0	261	12.0	6	5.0	2.7	189
14.1	1	10.5	10.5	200	14.1	1	21.0	21.0	255	14.1	3	20.0	17.5	221	16.2	3	21.7	21.3	256	14.1	6	12.4	5.3	172
16.2	1	7.5	7.5	240											18.0	2	6.0	5.0	244	16.2	2	6.7	6.7	076
															21.0	2	4.5	4.1	066	18.0	1	7.5	7.5	230

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9 km. above sea level

January, 1963 (Pausa II—Magha II, 1884 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D
	NAGPUR/SONEGAON					PORTBLAIR					TIRUCHCHIRAPPALLI					VIJAYWADA/GANNAVARAM								
	0530 hr.*					0530 hr.*				14.1	5	10.4	7.8	227		1730								
10.5	29	36.0	33.8	244						16.2	1	12.0	12.0	215	10.5	14	21.1	20.4	230					
12.0	28	33.5	32.2	245	10.5	16	11.5	8.8	173	18.0	1	4.0	4.0	265	12.0	9	21.2	20.9	233					
14.1	27	30.4	29.6	247	12.0	12	16.7	15.8	162	21.0	1	9.0	9.0	1010	14.1	6	13.2	12.8	235					
16.2	24	19.2	16.4	245	14.1	4	13.9	13.6	170		TRIVANDRUM				16.2	5	7.8	7.6	238					
18.0	16	10.3	9.1	258	16.2	2	10.5	10.3	136		0530 hr.*				18.0	1	6.0	6.0	285					
21.0	5	9.9	5.8	051						10.5	26	12.4	7.9	160		VISHAKHAPATNAM								
24.0	2	5.3	1.3	274						12.0	26	13.8	10.7	145		0530 hr.*								
	1130 hr.				10.5	1	16.5	16.5	175	14.1	23	12.9	4.3	153	10.5	25	21.9	21.2	237					
10.5	3	32.8	32.7	263	12.0	1	5.5	5.5	140	16.2	17	9.2	2.0	086	12.0	23	23.1	22.2	235					
12.0	1	36.5	36.5	260	14.1	1	6.5	6.5	200	18.0	12	9.2	3.0	025	14.1	18	20.8	19.3	233					
	1730 hr.					1730 hr.*				21.0	5	8.0	4.7	000	16.2	14	9.6	6.6	251					
10.5	31	36.2	35.3	244	10.5	16	11.1	9.7	185						18.0	8	5.5	2.3	335					
12.0	31	36.0	35.2	241	12.0	13	14.0	12.8	182						21.0	1	9.5	9.5	075					
14.1	27	30.0	29.0	248	14.1	8	17.4	16.4	174							1130 hr.								
16.2	23	22.3	20.0	252	16.2	1	8.5	8.5	180	10.5	13	8.3	4.8	160	10.5	7	19.1	18.3	226					
18.0	13	13.5	7.9	248		RAIPUR				12.0	13	7.8	6.2	163	12.0	5	21.7	21.6	223					
21.0	5	9.7	7.2	251		1730 hr.				14.1	9	10.8	6.7	147	14.1	3	12.0	11.7	218					
	NEW DELHI/SAF-DARJUNG				10.5	1	25.0	25.0	250	16.2	7	6.6	4.0	082	16.2	2	8.7	6.5	260					
	0530 hr.*					SRINAGAR				18.0	6	5.9	3.4	173	18.0	1	4.0	4.0	015					
10.5	26	39.5	38.5	265	10.5	18	25.2	22.2	270	21.0	2	10.5	9.5	120		1730 hr.*								
12.0	18	41.1	39.8	261	12.0	12	31.2	26.5	270		1730 hr.*				10.5	27	22.3	21.7	231					
14.1	10	35.2	34.9	265	14.1	3	22.0	21.3	279	10.5	30	11.5	9.5	160	12.0	27	22.6	19.7	234					
16.2	6	19.1	18.6	268	16.2	2	13.3	13.3	289	12.0	28	13.4	10.8	145	14.1	26	20.4	18.3	233					
18.0	4	16.5	15.8	272	18.0	2	14.7	11.4	294	14.1	24	13.5	9.7	146	16.2	33	13.7	10.0	251					
21.0	1	14.0	14.0	295	21.0	1	21.0	21.0	335	16.2	20	8.6	6.9	257	18.0	17	8.0	3.1	268					
	1130 hr.					SRINAGAR				18.0	12	7.9	1.5	227	21.0	4	5.4	2.8	090					
10.5	1	9.5	9.5	275		1730 hr.*				21.0	4	9.0	8.5	096	24.0	1	5.0	5.0	105					
12.0	1	15.5	15.5	255	10.5	21	26.0	22.4	270	24.0	1	25.5	25.5	095		2330 hr.								
14.1	1	38.0	38.0	270	12.0	17	27.6	24.4	264	10.5	1	7.5	7.5	230										
16.2	1	56.5	56.5	275	14.1	14	27.5	25.5	270		VERAVAL													
18.0	1	69.0	69.0	265	16.2	3	13.1	10.9	300		1730 hr.													
	1730 hr.*				18.0	2	9.7	6.5	120	10.5	9	40.0	38.9	253										
10.5	25	39.3	37.6	261		TIRUCHCHIRAPPALLI				12.0	2	35.0	35.0	267										
12.0	15	46.3	45.0	260		0530 hr.					VIJAYWADA/GANNAVARAM													
14.1	7	34.4	33.2	264	10.5	7	9.0	7.5	201		0530 hr.													
16.2	4	23.7	23.6	272	12.0	2	7.7	6.4	158	10.5	8	18.4	17.9	236										
18.0	3	21.3	21.3	277		1730 hr.				12.0	5	21.4	20.4	235										
	POONA				10.5	10	10.9	8.1	195	14.1	4	12.9	12.9	244										
	1730 hr.				12.0	7	12.2	11.7	185	16.2	1	6.5	6.5	190										
10.5	9	27.1	26.1	253																				
12.0	5	26.1	24.6	249																				
14.1	2	16.5	15.8	245																				

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 14 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of Station	Type of Instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	2	3	4	5	6
1	Ahmadabad	Fan Type	20th July, 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
10	New Delhi/Safdarjung	Clock type	3rd December, 1943	00 and 12	
11	Port Blair	Fan type	4th December, 1949	00 and 12	
12	Srinagar	Clock type	1st August, 1962	00 and 12	
13	Trivandrum	Fan type	1st July, 1947	00 and 12	
14	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI- MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

January, 1963 (Pausa 11—Magha 11, 1884 Saka)

(B) From Ascents at 12 Hours G. M. T.

Standard Pressure Surface mbs.	TRIVANDRUM Surf. Pr. (1031 mb.)						VISHAKHAPATNAM (1009 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	31	064	301.6	303	298	294.3	31	041	297.8	299	297	290.0
1000	31	072	..	..	..	..	31	115	..	..	..	..
900	31	1000	294.4	297	291	288.8	31	1029	290.6	296	288	278.6
850	31	1494	291.3	293	288	285.7	31	1518	289.1	292	285	275.9
800	31	2012	288.1	291	285	282.7	31	2032	286.2	289	281	269.5
700	31	3133	283.0	286	280	273.5	31	3147	281.3	285	275	263.0
600	31	4401	276.2	280	272	267.0	31	4407	274.0	280	267	254.7
500	31	5858	268.3	273	266	..	31	5858	266.2	270	261	..
400	31	7578	257.3	261	253	..	31	7567	255.6	259	250	..
300	31	9686	241.8	247	237	..	30	9672	241.9	246	234	..
250	31	10951	231.3	236	226	..	29	10945	232.3	238	225	..
200	30	12430	219.1	224	211	..	29	12431	221.4	227	215	..
175	27	13253	213.2	218	206	..	29	13274	215.3	222	210	..
150	26	14230	207.1	212	199	..	29	14244	208.9	217	201	..
125	23	15304	200.9	207	193	..	26	15321	203.2	211	194	..
100	20	16612	195.7	201	185	..	26	16653	197.8	205	181	..
80	17	17890	198.2	205	191	..	24	17960	198.5	205	186	..
70	12	18664	199.8	209	194	..	23	18745	199.7	206	188	..
60	10	19606	203.4	214	197	..	17	19695	202.8	217	195	..
50	8	20692	205.1	210	198	..	15	20785	205.5	215	197	..
40							9	22104	208.8	213	203	..
30							6	23891	213.0	218	207	..
20												
10												

NOTE :—Number of observation refer to those of dynamic height.

Means are not worked out for temperature and dew point for the 1000 mbs. surface and for dew point standard pressure surfaces with temperature less than 273° A.

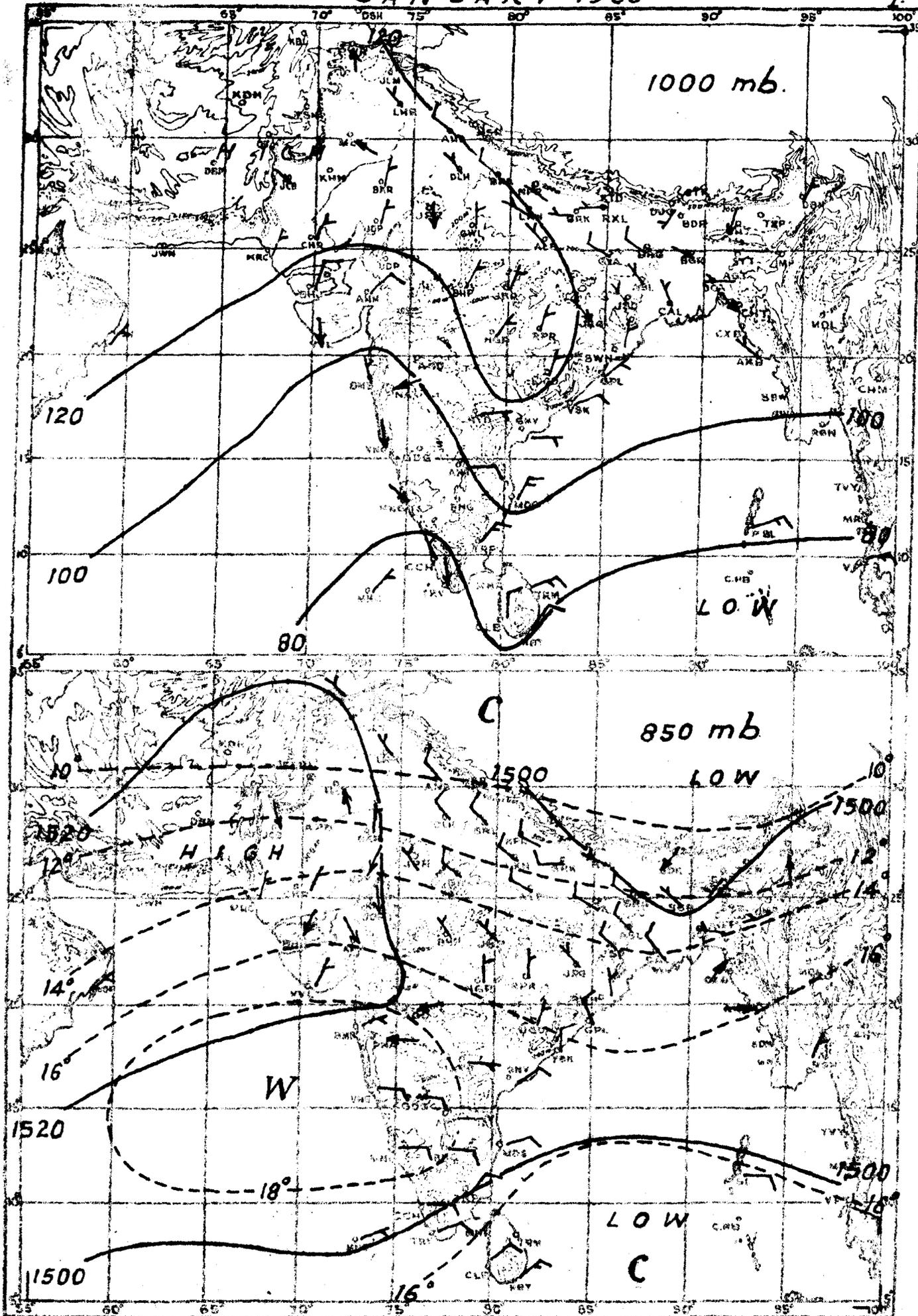
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

L.Med.D.

JANUARY 1963

Plate 7.



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots. DPAC/2577 : 4 : 1967

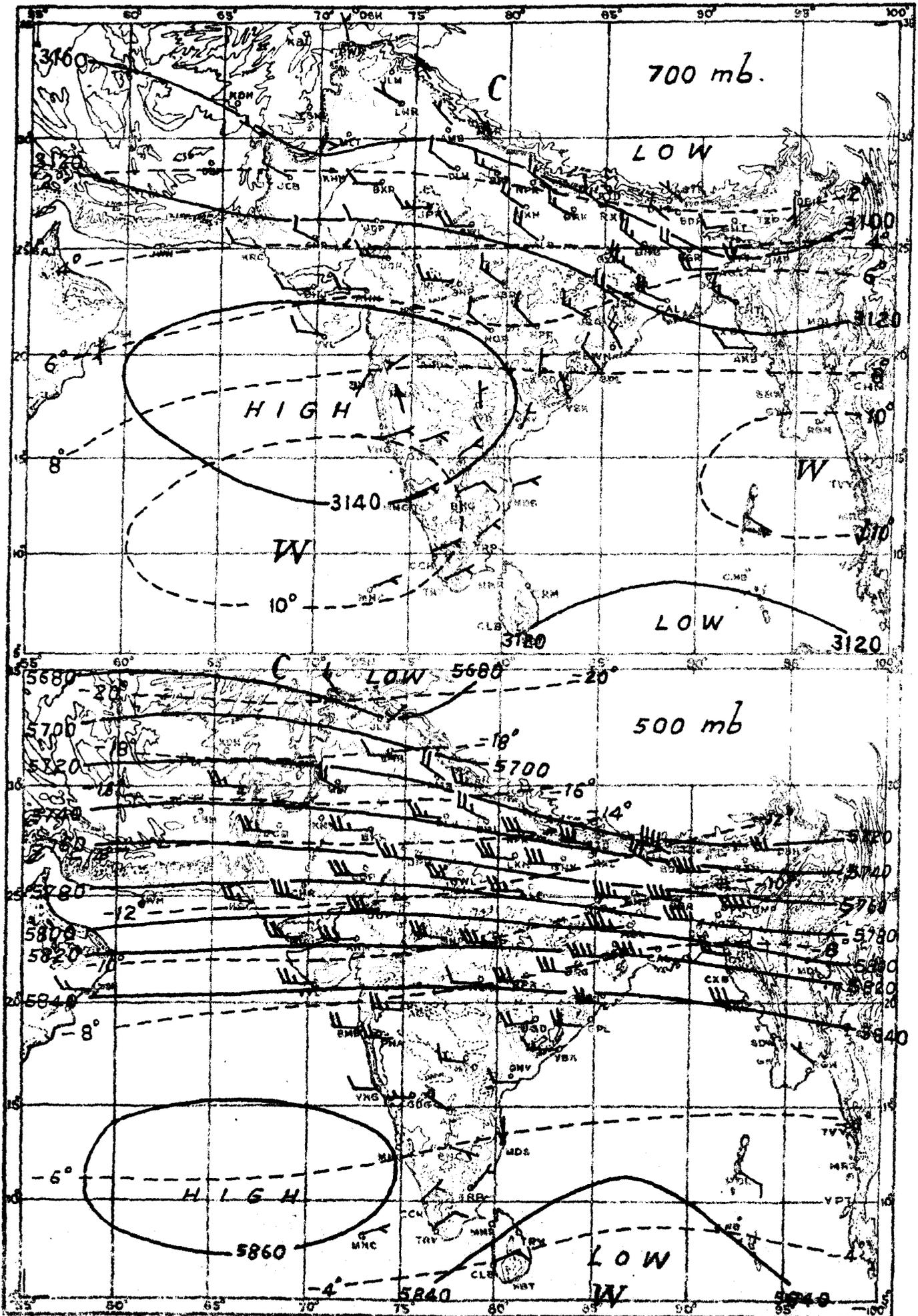
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

JANUARY 1963

L.Met.D.

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots. ROGC/2577(N)4.67

----- Isotherms in degrees centigrade ————— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

February

Published by authority of the Government of India

Chief features:—

- (i) Mainly dry weather during the first fortnight over most parts of the country;
- (ii) Spells of good precipitation in northwest India during the third week and in the central parts of the country during the last week; and
- (iii) Movement of five western disturbance, across northwest India.

A feeble western disturbance lay over north Baluchistan as an upper air trough on 3rd and moved eastwards across Jammu and Kashmir by 5th. It caused a few light falls of snow or rain in Jammu and Kashmir on 5th. This was followed immediately by another feeble western disturbance which moved from Baluchistan and adjoining Afghanistan across Jammu and Kashmir during the period 5th to 7th, without causing any precipitation. The third western disturbance which was also feeble moved across the extreme north of the country between 8th and 10th after causing a few light showers in the Punjab hills on 8th. The fourth western disturbance appeared over Baluchistan and adjoining Afghanistan on 11th as a surface low and moved eastwards across the Western Himalayas by 14th. Under its influence, light precipitation occurred at a number of places in the Punjab hills and Himachal Pradesh on 12th and 13th. The last western disturbance of the month which was active lay as a sea level low over north Baluchistan and adjoining Punjab (P) on 14th. Moving in an easterly direction, it passed off across the hills of west Uttar Pradesh by 18th. It caused well-distributed rain or snow in the Western Himalayas between 15th and 17th. Scattered or local showers also occurred in the plains of the Punjab (I) and of west Uttar Pradesh on 16th and 17th and in Rajasthan on 16th. Banihal recorded 6 cm of rain and Dalhousie 5 cm on 16th and Garbyang 5 cm on 17th.

In association with the last western disturbance, an induced low developed over Madhya Pradesh on 17th. It moved eastwards to Orissa on 18th and later became unimportant. A few thundershowers were reported from Madhya Pradesh on 18th and 19th. A well marked low level cyclonic circulation developed over Saurashtra and neighbourhood on 20th. It moved slowly eastwards to Bihar Plateau and became unimportant by 24th. Under its influence, a spell of thunderstorm activity prevailed over north Madhya Pradesh, Uttar Pradesh and Bihar State from 20th to 23rd. A trough in the low level easterlies extending upto 1.5 kms a.s.l. also developed over the northwestern parts of the Peninsula and west Madhya Pradesh and persisted throughout the last week. The increased moisture inflow from the Bay of Bengal caused the thunderstorm activity to continue over the central parts of the country till the end of the month. The activity also extended to Maharashtra State and adjoining parts of Mysore State during the last four days. Bijapur recorded 4 cm of rain on 26th, Miraj 6 cm on 27th and Keonjhar 8 cm on 28th.

In association with the development of an active trough in the easterlies over the south Bay of Bengal, fairly widespread thunder showers occurred in the south Bay Islands during the first four days of the month. Kondul recorded 13 cm of rain on 1st and Car Nicobar 5 cm on 2nd. Mainly dry weather prevailed thereafter till the last week when a few showers again occurred there. Over the Peninsula weather remained practically dry during the first three weeks. However, the seasonal low in the south became active during the second week and a few light showers occurred in the extreme south Madras State on 7th and 9th. With the general increase of moist air inflow into the Peninsula during the last week as mentioned earlier, thundershowers occurred in south Kerala and in the extreme south Madras State on most days of the week. Coonoor recorded 5 cm of rain on 25th.

Night temperatures were below normal in the Peninsula and central parts of the country during the first week, being appreciably so in the northern parts of the Peninsula on some days. They continued to be below normal in the north Peninsula upto 17th but were above normal in the south

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Peninsula from 6th to 10th. Night temperatures remained generally above normal in the central parts of the country during the second fortnight and in northwest India during the first three weeks, being appreciably to markedly so in some parts on 15th and 16th. They were also above normal in northeast India during the third week and in Uttar Pradesh on most days during the period 9th to 18th.

The rainfall for the month was in large excess in Madhya Maharashtra, north Interior Mysore and the Arabian Sea Islands, in moderate excess in west Madhya Pradesh and Kerala and in slight excess in Vidarbha. It was in slight defect in south Interior Mysore, in moderate defect in east Madhya Pradesh and Marathwada and in large defect in the Bay Islands, Assam, West Bengal, Orissa, Bihar State, Uttar Pradesh, the Punjab (I), Jammu and Kashmir, Rajasthan, the Konkan and the Madras State. There was no rain over the rest of the country outside Himachal Pradesh.

Mean maximum temperature was normal in Madhya Maharashtra, Marathwada, Vidarbha, coastal Andhra Pradesh, Telangana, the Madras State, Interior Mysore, Kerala and the Arabian Sea Islands and below normal in Rayalaseema. It was above normal over the rest of the country outside Himachal Pradesh. Mean minimum temperature was above normal in the Bay Islands, Jammu and Kashmir, Rajasthan and Gujarat State and below normal in Andhra Pradesh and the Arabian Sea Islands. It was normal over the rest of the country outside Himachal Pradesh.

Mean relative humidity in the morning was above normal in Rayalaseema and the Arabian Sea Islands and below normal in Assam, West Bengal, Orissa, Bihar State, Jammu and Kashmir, west Rajasthan, east Madhya Pradesh, Gujarat Region, coastal Mysore and Kerala. It was normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was above normal in the Madras State and the Arabian Sea Islands and normal in the Bay Islands, Bihar State, Jammu and Kashmir, Madhya Pradesh, Madhya Maharashtra, Marathwada, Vidarbha, coastal Andhra Pradesh, coastal and north Interior Mysore and Kerala. It was below normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I. S. T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I. S. T. of the date given in the succeeding column.

POONA 5,

The 23rd May, 1962

R. ANANTHAKRISHNAN,

for Director General of Observatories.

TABLE I—DIVISIONAL AND SUB-DIVISIONAL MEANS—FEBRUARY 1963 (MAGHA 12—PHALGUNA 9, 1884 SAKA)

1	2	3	4	5	Relative humidity %		Cloud		1	2	3	4	5	Relative humidity %		Cloud	
					0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.						0830 hrs. I.S.T.	1730 hrs. I.S.T.		
																Mean maximum temperature °C	Mean minimum temperature °C
Division									Division—(contd.)								
1. Assam (Including Manipur, Tripura)	8.9 -28.8	24	27.3 +2.4	12.2 +0.8	69 -9	51	2.3 -0.8	2.4	8. Rajasthan	1.5 -4.0	27	29.4 +3.1	12.0 +1.2	53 0	27	1.0 -0.9	1.6
2. West Bengal	1.7 -20.9	8	30.0 +2.1	15.2 +0.7	59 -11	43	1.1 -0.8	1.4	9. Madhya Pradesh	10.8 -2.8	79	30.5 +2.0	13.0 +0.7	53 -3	28	1.5 -0.1	1.9
3. Orissa	0.4 -23.3	2	30.9 +1.1	16.3 -0.8	61 -7	48	1.4 -0.5	1.4	10. Gujarat State	0 -1.7	0	33.0 +2.9	15.7 +1.3	51 -6	29	0.5 -0.7	0.3
4. Bihar	4.9 -19.4	20	28.9 +2.5	12.9 +0.4	56 -11	39	1.6 -0.3	1.7	11. Maharashtra State	8.6 +4.5	210	32.7 +1.2	16.3 +0.1	51 -3	30	1.0 -0.1	1.4
5. Uttar Pradesh	5.4 -14.9	27	27.6 +2.4	10.7 +0.5	68 -1	40	1.0 -0.9	1.3	12. Andhra Pradesh	0 -9.0	0	31.9 -0.4	17.3 -2.3	69 -1	40	1.5 -0.6	1.5
6. Punjab (India) (Including Himachal Pradesh and Delhi)*	11.7 -17.9	40	25.7 +2.7	8.7 +0.3	70 -1	42	1.4 -1.1	2.3	13. Madras State	0.5 -15.2	3	30.3 -1.0	21.0 -0.1	77 -1	57	3.6 +0.7	2.7
7. Jammu and Kashmir	35.9 -67.7	35	5.9 +2.2	-4.8 +1.9	64 -6	50	4.8 -0.9	4.8	14. Mysore	7.2 +3.3	185	31.5 -0.3	17.5 -0.6	60 -4	34	1.5 -0.1	2.1
									15. Kerala	30.3 +8.3	138	31.9 +0.5	22.7 -0.7	71 -6	63	3.2 +0.5	2.9
Sub-Division									Sub-Division—(contd.)								
1. Bay Islands	8.2 -20.0	29	30.8 +1.1	22.9 +1.5	73 +2	78	3.4 +0.5	3.1	16. Madhya Pradesh (East)	11.2 -10.6	51	30.6 +1.9	13.4 +0.5	57 -6	31	1.7 +0.1	1.8
2. Assam (Including Manipur, Tripura)	8.9 -28.8	24	27.3 +2.4	12.2 +0.8	69 -9	51	2.3 -0.8	2.4	17. Gujarat Region	0 -1.5	0	34.9 +2.9	15.7 +1.4	49 -7	22	0.6 -0.4	0.4
3. Sub-Himalayan West Bengal	0.3 -15.0	2	27.4 +1.5	11.9 +0.1	67 -7	44	1.1 -0.6	1.8	18. Saurashtra and Kutch	0 -1.8	0	31.8 +2.8	15.7 +1.1	52 -5	34	0.4 -0.8	0.3
4. Gangetic West Bengal	2.2 -23.1	9	30.8 +2.3	16.2 +0.9	57 -12	42	1.1 -0.9	1.3	19. Konkan	0.2 -0.6	25	31.2 +2.2	19.8 +0.7	66 -2	60	0.9 -0.3	0.5
5. Orissa	0.4 -23.3	2	30.9 +1.1	16.3 -0.8	61 -7	48	1.4 -0.5	1.4	20. Madhya Maharashtra	13.9 +12.0	732	33.5 +0.8	14.1 -0.3	45 -4	20	0.9 0	1.6
6. Bihar Plateau	7.9 -29.0	21	29.4 +2.6	13.5 +0.5	52 -13	34	1.7 -0.3	2.1	21. Marathwada	3.6 -1.7	68	33.1 +0.9	15.9 +0.3	39 -3	17	1.1 -0.1	2.1
7. Bihar Plains	3.1 -13.7	18	28.4 +2.4	12.3 +0.3	59 -9	43	1.5 -0.3	1.4	22. Vidarbha	11.7 +1.7	117	32.9 +0.9	16.0 -0.2	49 -2	22	1.3 -0.2	1.6
8. Uttar Pradesh (East)	2.8 -13.7	17	28.1 +2.1	10.9 +0.2	68 -2	41	1.0 -0.8	1.2	23. Coastal Andhra Pradesh	0 -12.0	0	31.1 -0.3	18.1 -2.3	74 -3	52	1.9 -0.4	1.8
9. Uttar Pradesh (West)	9.3 -16.8	36	26.9 +2.8	10.4 +0.9	67 -1	37	1.1 -1.2	1.4	24. Telangana	0 -6.8	0	32.9 +0.3	16.2 -2.2	63 -3	22	1.4 -0.9	0.8
10. Punjab (India) (Including Delhi)	11.7 -17.9	40	25.7 +2.7	8.7 +0.3	70 -1	42	1.4 -1.1	2.3	25. Rayalaseema	0 -5.1	0	32.5 -1.5	16.8 -2.7	66 +7	37	0.9 -0.4	1.6
11. Himachal Pradesh	33.0 ..	..	23.5 ..	5.7 ..	87 ..	40	1.9 ..	1.3	26. Madras State	0.5 -15.2	3	30.3 -1.0	21.0 -0.1	77 -1	57	3.6 +0.7	2.7
12. Jammu and Kashmir	35.9 -67.7	35	5.9 +2.2	-4.8 +1.9	64 -6	50	4.8 -0.9	4.8	27. Coastal Mysore	0 -0.9	0	32.7 +1.6	20.4 -0.4	70 -6	60	2.0 0	1.9
13. Rajasthan (West)	1.3 -4.7	22	29.3 +2.9	11.7 +1.2	53 -6	27	0.9 -1.2	1.7	28. Interior Mysore (North)	15.1 +10.0	296	32.1 -0.5	17.3 -0.7	50 -4	25	1.1 +0.1	1.6
14. Rajasthan (East)	1.8 -3.3	35	29.5 +3.2	12.2 +1.2	54 +4	27	1.1 -0.6	1.6	29. Interior Mysore (South)	3.4 -0.6	85	30.4 -1.0	16.3 -0.6	64 -3	29	1.5 -0.4	2.7
15. Madhya Pradesh (West)	10.5 +3.3	146	30.4 +2.0	12.6 +0.8	51 -1	26	1.3 -0.2	1.9	30. Kerala	30.3 +8.3	138	31.9 +0.5	22.7 -0.7	71 -6	63	3.2 +0.5	2.9
									31. Arabian Sea Islands	112.9 +94.9	627	30.0 +0.3	22.2 -1.5	84 +10	73	3.9 +1.1	3.9

Notes.—The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh not included.

72 TABLE II—SUMMARY OF OBSERVATIONS OF TEMPERATURE, RAINFALL AND WEATHER—FEBRUARY, 1963 (MAGHA 12—PHALGUNA 9, 1884 SAKA)

Sub-Division and station	Air temperature in °C								Rainfall in millimetres				No. of rainy days (2.5 mm. or more)		Wind speed, km. per hour			Weather phenomena—No. of days with																						
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total in the month	Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm.)	Precipitation (0.3 mm. or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust-storm	Ground frost	Gale	Squall	Line squall											
																														10	11	12	13	14	15	16	17	18	19	20a
Hydrometeorological Observatories (Contd.)																																								
Baghmati Catchment																																								
Kosi Catchment																																								
Chautara	22.1	..	24.4	21	8.7	..	6.9	1	0	1.8	..	1.8	17	0	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chepua . . . . .	..	..	..	..	..	..	..	..	2.9	24.4	..	11.0	13	4	..	..	..	..	..	1	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Walungchung Gola	8.1	..	10.5	26,28	-3.1	..	-5.6	13	8.2	46.2	..	44.6	13	1	..	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplethok	20.7	..	23.3	25	8.9	..	6.3	1	0	9.0	..	4.6	25	1	..	..	..	..	..	0	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur	18.1	..	21.2	19,25	9.3	..	7.1	2,13	0	0	..	0	..	0	..	..	..	..	..	5	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung	16.9	..	19.2	23	6.5	..	4.2	1	0	8.3	..	6.1	25	1	..	..	..	..	..	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Okhaldhunga	16.5 (k)	..	20.3	28	7.1	..	4.7	13	0	0	..	0	..	0	..	6.6	5.0	..	..	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chainpur	17.5	..	21.0	17,25	11.6	..	9.9	1	0	0	..	0	..	0	..	..	..	..	..	0	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angbung†																																								
Barahakshetra	28.4	..	31.7	19	12.7	..	10.6	12	0	0	..	0	..	0	..	8.5	5.1	..	..	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tista Catchment																																								
Gangick	17.8	..	20.8	23	6.9	..	5.2	2,3	0.8	41.5	..	26.8	25	4	..	6.8	5.3	..	..	1	6	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	
Gezing	19.9	..	23.0	26	8.1	..	5.5	1	0	4.5	..	4.5	17	1	..	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Data included under "Nepal".

†data not available.

(k) Mean of 20 days.

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—FEBRUARY, 1963 (MAGHA 12—PHALGUNA 9, 1884 SAKA)

Table with 28 columns: 1. Sub-Division and station; 2. Hour of observation I.S.T.; 3. Station elevation in meters; 4-6. Mean pressure in millibars (At mean sea level, At station level, Departure from normal); 7-9. Mean temperature in °C (Dry bulb, Wet bulb, Dew point); 10. Vapour pressure in mbs.; 11. Relative humidity%; 12. Departure from normal; 13-14. Cloud amount (Okta) (Mean amount, Departure from normal); 15. Mean wind speed, in km. per hour; 16-18. Wind speed (km. p. h.) (62 or more, 20 to 61, 1 to 19); 19-28. No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

Table with 28 columns: Sub-Division and station, Hour of observation I.S.T., Station elevation in metres, Mean pressures in millibars (At mean sea level, At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mbs., Relative humidity %, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind speed in km. per hour (62 or more, 20 to 61, 1 to 19), and No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

MONTHLY MEANS OF UPPER WINDS

February 1963 (Magha 12—Phalgun 9, 1884 Saka)

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 40 stations all the observations were taken by means of pilot balloons and at 14 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of the stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data up to 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n—represents the number of observations;

V—represents the mean wind speed in metres per second irrespective of direction;

v—represents the resultant mean velocity in metres per second;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km.a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a.m.s.l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 & 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N	Long. E	Height of Anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (IST)		
1.	Agartala	23°53'	91°15'	17	28th Nov. 1951	0530		1730 2330
2.	Ahmadabad	23°04'	72°38'	61	19th May 1928	0530*	1130	1730* 2330
3.	Allahabad/Bamhrauli	25°27'	81°44'	103	28th Feb. 1930	0530*	1130	1730* 2330
4.	Ambala	30°23'	78°46'	279	1st Apr. 1941	0530	1130	1730 2330
5.	Anantapur	14°41'	77°37'	365	12th Feb. 1946	0530		1730 2330
6.	Asansol	23°41'	86°59'	135	29th May 1942	0530		1730 2330
7.	Aurangabad/Chikalthan	19°51'	75°24'	588	7th Oct. 1951	0530		1730 2330
8.	Bahraich	27°34'	81°36'	134	1st Oct. 1961	0530		1730
9.	Banglore	12°58'	77°35'	936	19th May 1915	0530@	1130	1730@ 2330
10.	Bareilly	28°22'	79°24'	181	12th Jan. 1943	0530		1730
11.	Begampet	17°27'	78°28'	543	1st Sep. 1929	0530		1730 2330
12.	Bhagalpur	25°14'	86°57'	61	19th May 1950	0530		1730
13.	Bhopal/Bairagarh	23°17'	77°21'	532	26th Feb. 1943	0530		1730 2330
14.	Bhubaneshwar	20°15'	85°50'	54	5th Dec. 1942	0530		1730 2330
15.	Bhuj/Rudramata	23°15'	69°48'	90	14th Sep. 1937	0530		1730 2330
16.	Bikaner	28°00'	73°18'	229	18th Oct. 1946	0530		1730 2330
17.	Bombay/Santa Cruz	19°07'	72°51'	27	14th May 1933	0530*	1130	1730* 2330
18.	Calcutta/Dum Dum	22°39'	88°27'	13	14th May 1921	0530*	1130	1730* 2330
19.	Cochin/Willingdon†	09°56'	76°14'	13	16th Mar. 1942	0530		1730 2330
20.	Darjeeling	27°03'	88°16'	2115	21st May 1956	0830		1730 2330
21.	Dehra Dun	30°19'	78°03'	692	1st Oct. 1958	0530		1730
22.	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June 1948	0530	1130	1730 2330
23.	Gadag	15°25'	75°38'	650	3rd May 1943	0530		1730 2330
24.	Gauhati	26°05'	91°43'	55	12th Mar. 1955	0530*	1130	1730* 2330
25.	Gaya	24°45'	84°57'	119	19th Mar. 1937	0530		1730 2330
26.	Gopalpur	19°16'	84°53'	24	15th Feb. 1946	0530		1730 2330
27.	Gorakhpur	26°45'	83°22'	83	5th Jan. 1943	0530		1730
28.	Gwalior	26°14'	78°15'	208	7th May 1938	0530	1130	1730 2330
29.	Imphal/Tulihal	24°46'	93°54'	782	8th Mar. 1952	0530	1130	1730 2330
30.	Jabalpur	23°10'	79°57'	402	30th July 1928	0530		1730 2330
31.	Jagdapur	19°05'	82°02'	562	25th Mar. 1948	0530		1730 2330
32.	Jaipur/Sanganer	26°49'	75°48'	403	6th June 1953	0530		1730 2330
33.	Jamshedpur	22°49'	86°11'	144	23rd July 1942	0530		1730
34.	Jharsuguda	21°55'	84°05'	240	1st May 1944	0530		1730 2330
35.	Jodhpur	26°18'	73°01'	229	15th Oct. 1934	0530*	1130	1730* 2330
36.	Lucknow/Amausi	26°45'	80°53'	133	20th Nov. 1950	0530		1730 2330
37.	Madras/Minambakkam	13°00'	80°11'	29	8th Apr. 1926	0530*	1130	1730* 2330
38.	Mangalore/Bajpe	12°55'	74°53'	104	25th May 1959	0530		1730 2330
39.	Minicoy	08°18'	73°00'	15	14th Apr. 1941	0530		1730 2330
40.	Nagpur/Sonegaon	21°06'	79°03'	316	23rd Apr. 1943	0530*	1130	1730* 2330
41.	New Delhi/Safdarjung	28°35'	77°12'	227	20th Oct. 1936	0530*	1130	1730* 2330
42.	Poona	18°32'	73°51'	593	5th Jan. 1925	0530		1730 2330
43.	Port Blair	11°40'	92°43'	95	29th Oct. 1945	0530*	1130	1730* 2330
44.	Raipur	21°14'	81°39'	308	15th July 1944	0530		1730 2330
45.	Raxaul	26°59'	84°51'	83	28th Oct. 1957	0530		1730
46.	Siliguri/Baghdogra	26°38'	88°19'	140	7th June 1953	0530		1730 2330
47.	Srinagar	34°06'	74°48'	1603	1st August 1962	0530*		1730*
48.	Tiruchirappalli	10°46'	78°43'	96	22nd June 1936	0530		1730 2330
49.	Trivandrum	08°29'	76°57'	73	8th Dec. 1928	0530*	1130	1730* 2330
50.	Udaipur	24°35'	73°42'	587	24th June 1947	0530		1730 2330
51.	Vengurla	15°52'	73°38'	8	22nd Nov. 1941	0530		1730 2330
52.	Veraval	20°54'	70°22'	17	13th Oct. 1941	0530		1730 2330
53.	Vijaywada/Gannavaram	16°32'	80°48'	32	8th Apr. 1942	0530		1730 2330
54.	Vishakhapatnam	17°43'	83°14'	10	24th Sep. 1928	0530*	1130	1730* 2330

* Radiowind ascents.

@Radiosonde ascents followed by optical theodolite.

† Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

February 1963 (Magha 12—Phalguna 9, 1894 Saka)

Station	AGARTALA												AHMADABAD															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	28	1.4	1.0	177	28	1.9	1.3	273	28	1.1	0.6	171	28	3.2	2.3	054	28	4.6	3.0	085	28	2.6	1.5	352				
0.15 a. g. . .	25	3.9	0.6	008	28	3.9	2.5	280	28	4.4	1.8	245	28	8.4	5.8	050	28	4.5	3.3	072	28	4.0	1.9	340				
0.3 a. m. s. l. . .	25	4.3	1.8	320	28	4.2	2.7	276	28	4.7	2.6	260	28	8.4	5.9	051	28	4.8	3.5	076	28	4.1	2.0	342				
0.6 „ . . .	25	3.9	2.4	308	28	3.9	2.8	262	28	4.8	3.1	279	28	8.5	5.6	056	28	5.1	3.0	080	28	3.8	1.5	340				
0.9 „ . . .	25	3.8	2.6	298	28	3.7	2.7	256	28	5.0	3.8	278	28	6.4	2.6	040	28	4.9	1.9	066	28	4.0	1.6	353				
1.5 „ . . .	25	5.7	5.1	287	28	5.3	4.2	261	28	6.3	5.2	276	28	4.7	1.2	318	28	4.7	1.3	280	28	4.0	1.6	313				
2.1 „ . . .	24	8.2	7.8	289	28	8.0	7.0	277	28	8.3	7.1	280	28	6.3	4.2	256	28	5.3	3.5	260	28	5.3	2.7	287				
3.0 „ . . .	22	12.5	12.0	294	28	12.0	11.8	287	26	12.2	11.7	285	28	7.3	4.8	262	28	7.9	5.9	254	28	7.1	4.9	267				
3.6 „ . . .	21	13.8	13.2	290	28	14.4	14.1	290	10	10.7	10.0	276	28	9.0	6.7	262	28	9.3	7.0	255	28	8.8	7.0	256				
4.5 „ . . .	17	14.9	14.4	278	27	16.9	16.6	282	2	13.7	12.9	275	28	11.0	9.1	266	28	12.5	10.1	262	28	11.5	9.0	273				
5.4 „ . . .	15	18.8	18.2	271	25	19.8	19.4	275					28	14.3	12.4	271	27	14.8	12.6	275	28	13.8	11.8	276				
6.0 „ . . .	8	20.4	19.4	261	23	21.2	20.7	273					28	17.1	15.6	270	27	17.4	15.7	278	28	16.5	15.0	275				
7.2 „ . . .	3	24.0	23.3	267	19	25.3	24.2	268					28	22.5	20.5	276	23	22.0	20.5	275	28	21.1	19.5	274				
9.0 „ . . .	1	39.0	39.0	260	6	36.1	34.0	264					26	38.6	29.4	277	6	40.1	37.7	257	25	38.2	31.6	271				

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA											
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	28	1.9	1.2	355	28	0.7	0.4	316	28	1.7	0.8	259	28	0.9	0.6	316	28	0.5	0.1	300	28	1.7	1.1	321				
0.15 a. g. . .	28	6.8	5.0	356	28	4.3	2.7	317	28	3.1	1.1	282	28	4.2	3.1	304	28	5.1	3.0	334	28	7.8	6.4	335				
0.3 a. m. s. l. . .	28	6.6	4.9	001	28	4.4	2.8	320	28	3.5	1.1	284	28	4.2	3.1	304	28	5.5	3.3	324	28	3.7	2.7	336				
0.6 „ . . .	28	5.3	4.0	004	28	4.9	3.8	334	28	4.5	2.2	304	28	4.5	3.2	303	28	5.8	3.0	321	28	8.3	6.9	332				
0.9 „ . . .	28	4.2	2.8	007	28	5.6	4.4	317	28	5.6	3.7	304	28	4.6	3.5	300	28	6.3	4.4	293	28	7.8	6.7	330				
1.5 „ . . .	28	4.0	0.4	345	27	8.3	7.3	294	28	7.7	6.1	293	28	6.5	5.9	293	28	7.7	6.7	285	28	6.4	4.7	313				
2.1 „ . . .	28	5.6	2.3	251	27	10.6	9.6	286	28	9.7	8.4	286	28	9.4	8.4	290	27	9.3	8.3	282	28	6.3	4.3	301				
3.0 „ . . .	26	6.3	4.1	252	27	11.9	11.0	287	27	12.8	11.6	286	28	12.5	11.5	284	22	12.1	6.5	289	26	6.5	4.6	289				
3.6 „ . . .	5	5.2	4.5	262	27	13.2	12.3	284	27	13.3	12.5	282	28	13.1	12.0	286	12	12.3	11.1	270	4	6.3	5.3	293				
4.5 „ . . .					26	15.2	14.3	280	25	15.2	14.4	286	28	14.7	13.8	281	1	7.5	7.5	285	1	6.0	6.0	310				
5.4 „ . . .					25	16.6	15.6	278	25	17.5	16.0	282	28	16.1	15.0	280												
6.0 „ . . .					25	18.1	17.0	277	21	19.1	18.0	275	28	17.6	16.2	278												
7.2 „ . . .					25	23.0	22.0	277	16	26.4	25.5	272	28	20.7	19.3	276												
9.0 „ . . .					21	39.0	38.0	273	5	41.4	40.4	270	15	34.3	32.5	268												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

February 1963 (Magha 12—Phalguna 9, 1884 Saka)

Station	AMBALA												ANANTAPUR											
	1130				1730				2330				0530				1730				2330			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	28	1.6	0.5	313	28	2.5	2.0	293	28	1.7	1.4	307	28	0.7	0.6	093	28	4.3	3.8	085	28	4.0	3.9	091
0.15 a. g. . .	28	4.5	2.0	339	28	6.0	4.8	299	28	10.1	9.4	330	28	4.2	3.5	107	28	7.3	7.1	080	28	8.5	8.4	101
0.3 a. m. s. l. . .	28	2.1	0.8	336	28	3.5	2.9	297	28	4.1	3.7	327												
0.6 „ . . .	28	6.1	3.2	322	28	6.7	5.3	299	28	9.7	9.1	330	28	4.8	4.4	116	28	6.5	6.2	081	28	9.2	9.1	102
0.9 „ . . .	28	6.0	4.1	321	28	6.8	5.2	307	28	7.7	7.0	330	28	6.9	6.4	111	28	5.8	5.6	083	28	8.7	8.6	104
1.5 „ . . .	28	5.6	2.9	329	28	6.2	4.4	313	28	6.3	4.2	314	27	7.5	6.4	094	28	5.5	5.3	088	28	6.0	5.3	098
2.1 „ . . .	28	5.6	2.9	302	28	6.3	3.7	312	28	6.6	3.7	290	27	6.7	5.0	075	28	5.9	5.4	087	28	5.8	4.0	078
3.0 „ . . .	27	6.1	3.4	276	28	6.2	3.6	303	27	6.2	4.0	280	26	5.2	4.1	080	28	5.1	3.8	093	27	5.1	3.3	076
3.6 „ . . .	25	6.8	4.0	272	26	6.8	3.6	303	2	2.7	2.5	198	26	5.2	2.5	080	27	4.9	2.5	085	18	4.1	2.0	084
4.5 „ . . .	24	8.2	5.8	277	22	7.9	5.1	299					23	4.6	0.6	169	25	5.1	1.5	245	14	3.7	0.8	310
5.4 „ . . .	20	10.1	9.5	285	19	10.1	8.4	290					21	6.4	3.9	271	23	6.6	4.0	265	9	7.0	5.7	292
6.0 „ . . .	18	13.7	12.3	282	18	12.6	11.6	284					21	7.9	5.5	250	23	8.2	6.1	258	7	7.8	5.8	264
7.2 „ . . .	7	15.1	12.3	282	4	6.5	5.9	266					19	10.4	9.0	260	20	10.8	9.7	260	2	11.0	11.0	275
9.0 „ . . .	1	35.0	35.0	260									14	14.9	13.5	244	17	14.8	13.3	252				

Station	ASANSOL												AURANGABAD/CHIKALTHAN											
	0530				1730				2330				0530				1730				2330			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	28	0.6	0.6	302	28	2.0	1.5	321	28	0.7	0.5	290	28	0.4	0.1	017	28	1.9	0.3	229	28	0.7	0.2	323
0.15 a. g. . .	28	4.8	3.3	319	28	5.4	4.4	322	28	6.2	3.4	320	28	4.7	2.2	077	28	3.5	1.3	201	28	5.9	2.8	065
0.3 a. m. s. l. . .	28	5.1	3.3	319	28	5.5	4.5	320	28	6.3	3.4	319												
0.6 „ . . .	28	6.4	4.3	318	28	6.4	5.5	314	28	6.8	4.6	307												
0.9 „ . . .	28	6.3	4.8	300	28	5.9	5.1	307	28	6.2	4.9	296	28	5.5	2.3	126	28	4.1	1.2	188	28	6.5	3.5	076
1.5 „ . . .	28	7.8	7.1	284	28	5.9	5.4	291	28	7.4	6.9	284	28	5.3	2.7	132	28	3.6	0.8	173	28	4.7	2.0	106
2.1 „ . . .	27	9.7	9.0	282	28	8.3	7.8	287	27	9.2	8.4	281	28	4.2	1.2	148	27	3.5	0.5	202	27	3.7	1.0	125
3.0 „ . . .	22	11.9	11.1	285	24	13.3	12.3	293	22	12.1	11.5	290	25	5.0	1.5	217	25	4.7	0.8	253	25	5.1	1.5	204
3.6 „ . . .	15	12.6	10.9	280	19	15.3	14.3	290	11	12.1	11.4	287	9	6.3	3.4	246	24	5.9	1.9	290	14	5.8	2.2	237
4.5 „ . . .	6	10.9	10.3	276	15	13.9	13.4	279	4	13.6	12.7	287					22	8.0	5.5	271				
5.4 „ . . .	3	12.8	12.3	273	7	17.1	16.5	273									20	10.9	7.7	279				
6.0 „ . . .	2	15.7	15.7	190	5	22.2	21.6	273									18	13.1	9.8	269				
7.2 „ . . .	1	12.5	12.5	185	2	34.7	33.1	270									1	14.0	14.0	285				
9.0 „ . . .					1	42.5	42.5	210																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

February 1963 (Magha 12—Phalguna 9, 1884 Saka)

Station	BAHRAICH												BANGALORE															
	0530				1130				1730				0530*				1130				1730*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.3	0.1	278	28	0.6	0.5	290	28	0.8	0.6	262	28	2.7	2.5	087	28	3.9	3.6	093	28	3.7	3.4	086				
0.15 a. g.	28	6.3	5.4	312	28	3.4	2.4	291	28	5.0	4.2	282	27	7.6	7.1	093	28	5.9	5.5	098	28	5.9	5.7	087				
0.3 a. m. s. l.	28	6.1	5.6	312	28	3.6	2.7	290	28	5.2	4.3	281																
0.6 "	28	6.8	6.2	305	28	5.9	4.9	294	28	6.0	5.1	285																
0.9 "	28	6.7	6.3	307	28	6.7	5.8	296	28	6.4	5.7	288																
1.5 "	28	8.0	7.6	300	27	7.9	7.2	300	28	8.0	7.4	298	27	8.9	8.0	091	28	6.3	5.9	095	28	6.4	6.3	093				
2.1 "	28	9.9	8.5	295	27	9.1	7.7	296	28	9.5	8.3	297	27	6.8	5.7	083	28	6.4	5.6	091	28	6.1	5.3	094				
3.0 "	28	11.3	8.4	294	27	10.4	9.3	290	28	10.4	9.5	297	27	5.0	4.4	087	28	5.1	4.4	092	28	4.5	3.7	085				
3.6 "	16	11.7	10.4	279	27	12.2	11.4	287	27	11.5	10.9	297	26	5.1	3.9	093	26	5.2	3.8	096	28	4.0	2.4	082				
4.5 "	9	16.1	15.8	269	27	15.8	15.0	284	26	14.7	14.3	289	26	4.4	1.9	106	24	4.1	1.6	092	26	4.1	1.7	065				
5.4 "	6	17.6	17.5	267	27	17.9	17.3	283	25	18.7	18.1	289	25	4.6	1.4	230	24	5.4	1.9	239	26	4.6	1.0	280				
6.0 "	3	15.3	15.0	258	27	19.4	18.7	281	25	21.1	20.2	286	25	6.2	2.6	216	23	5.7	2.6	254	25	5.3	2.4	260				
7.2 "	2	23.5	23.4	252	22	23.6	23.1	283	14	20.7	20.0	281	23	8.3	5.3	259	20	7.8	5.1	259	24	7.5	3.3	261				
9.0 "					11	29.0	28.0	276	1	10.0	10.0	270	18	11.7	9.1	250	13	11.7	9.9	233	22	12.0	9.5	250				

Station	BANGALORE				BAREILLY								BEGAMPET															
	2330				0530				1730				0530				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	4.5	4.3	092	28	1.2	1.1	293	28	1.3	1.2	280	28	0.4	0.4	110	28	2.7	2.3	103	28	1.7	1.4	103				
0.15 a. g.	28	9.2	9.1	103	28	7.5	7.1	312	28	5.3	4.9	290	28	4.9	4.5	144	28	4.9	4.5	100	28	7.3	6.5	118				
0.3 a. m. s. l.					28	7.3	6.8	314	28	5.0	4.7	289																
0.6 "					28	7.6	6.7	296	28	6.3	5.9	291	28	3.2	2.6	138	28	4.4	4.1	101	28	5.0	4.5	112				
0.9 "					28	7.7	7.1	304	28	6.7	6.3	292	28	6.3	5.7	130	28	4.6	4.1	102	28	7.7	6.8	122				
1.5 "	28	9.0	8.6	099	28	8.3	7.1	299	28	6.6	6.1	294	27	6.3	4.8	095	28	4.9	4.2	100	28	6.4	5.3	106				
2.1 "	28	5.6	4.4	091	26	8.3	6.9	293	28	7.2	5.9	297	27	7.1	4.3	067	28	4.6	3.3	081	28	5.6	3.0	071				
3.0 "	28	5.2	3.7	083	18	7.4	5.4	290	28	8.8	7.1	294	27	4.7	2.8	051	28	3.8	1.7	053	28	4.6	2.4	020				
3.6 "	25	4.7	3.9	089	10	6.1	5.0	301	27	10.1	9.2	293	27	4.6	0.7	019	28	5.1	1.5	292	23	4.5	1.3	326				
4.5 "	19	4.4	1.5	071	5	9.1	7.6	297	26	13.4	12.8	286	26	6.2	2.4	276	28	6.6	4.1	281	7	4.9	3.3	313				
5.4 "	14	4.9	2.8	273	2	7.0	7.0	301	22	14.6	14.0	286	24	8.9	6.6	273	28	9.0	7.2	279	3	6.5	5.3	305				
6.0 "	11	5.2	4.2	277	1	6.0	6.0	295	17	15.0	14.4	287	23	12.3	10.8	262	27	11.7	10.5	270	2	12.5	12.3	273				
7.2 "	1	4.5	4.5	165					7	17.1	15.3	283	18	15.9	15.1	261	18	16.5	15.2	271	2	11.0	11.0	275				
9.0 "									1	12.0	12.0	260	11	21.5	20.6	260	9	20.9	20.2	255								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

February 1963 (Magha 12—Phalgun 9, 1884 Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR							
	0630				1630				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	1.4	1.2	226	28	2.1	2.0	269	28	1.7	1.4	059	28	2.6	1.2	331	28	2.4	1.5	054	28	1.7	0.3	293				
0.15 a. g.	28	5.5	4.3	261	28	5.7	5.4	283	28	5.9	4.0	078	28	3.9	1.9	328	27	7.5	5.3	054	26	4.4	1.9	261				
0.3 a. m. s. l.	28	6.1	4.6	287	28	6.2	5.9	281													26	4.4	1.7	251				
0.6 "	28	6.4	5.5	309	28	7.3	6.9	285	28	5.2	3.4	073	28	3.6	1.8	332	27	6.7	5.0	055	26	4.5	1.7	248				
0.9 "	28	6.4	5.7	304	28	7.8	7.4	284	28	5.2	1.9	113	28	4.3	2.0	324	27	6.9	4.2	053	25	4.3	0.7	299				
1.5 "	28	8.0	7.3	293	28	9.1	8.9	281	28	5.9	1.4	250	28	4.6	2.1	306	27	4.3	1.0	061	25	4.5	1.9	340				
2.1 "	27	10.7	9.8	283	27	11.0	10.6	285	28	7.4	5.0	268	28	5.0	3.4	266	27	5.5	4.0	259	25	4.5	2.4	327				
3.0 "	22	12.5	11.7	285	24	14.0	13.4	289	27	9.7	7.7	270	27	9.3	7.0	263	26	9.5	7.5	263	25	5.0	4.1	303				
3.6 "	16	10.6	10.1	285	24	16.1	15.8	290	23	11.3	9.6	277	27	11.5	9.7	265	4	9.3	7.2	259	20	8.1	6.7	295				
4.5 "	9	13.2	12.9	282	17	15.9	15.3	288	22	13.2	11.2	282	26	13.6	11.7	273					18	10.9	9.9	281				
5.4 "	6	13.9	13.5	278	12	18.5	18.0	282	16	15.3	13.8	282	20	16.1	14.5	278					16	12.9	11.9	274				
6.0 "	4	13.5	13.0	279	10	20.2	19.7	284	13	18.2	16.6	284	18	18.4	17.2	277					13	16.1	15.0	269				
7.2 "	1	14.0	14.0	250	4	23.5	22.9	284	8	20.6	19.6	290	10	23.5	21.9	278												
9.0 "					1	36.0	36.0	285	5	25.6	24.2	281	2	32.7	32.4	280												

Station	BHUBANESHWAR								BHUJ/RUDRAMATA												BIKANER							
	1730				2330				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	4.2	2.4	170	28	2.8	2.0	207	28	0.4	0.2	286	28	2.7	1.6	001	28	1.0	0.6	297	28	0.7	0.7	314				
0.15 a. g.	28	4.8	2.3	175	28	7.0	5.0	197	28	5.8	4.3	358	28	4.1	2.9	002	28	5.2	3.7	343	28	6.9	4.2	088				
0.3 a. m. s. l.	28	4.8	2.2	178	28	6.9	4.8	192	28	6.9	5.6	009	28	4.4	3.1	003	28	5.7	4.3	354	28	5.7	3.8	100				
0.6 "	28	3.6	1.3	204	28	5.5	3.6	194	27	7.3	5.6	015	28	4.4	3.0	005	28	5.6	3.9	003	28	5.2	1.6	055				
0.9 "	28	3.0	0.7	261	28	4.5	1.9	216	27	6.2	4.2	015	28	4.3	2.9	006	28	4.9	3.2	018	28	4.7	2.3	300				
1.5 "	28	3.7	2.8	135	28	4.5	2.4	309	27	5.2	2.1	335	28	5.0	2.0	354	28	5.4	1.5	016	27	5.9	4.7	305				
2.1 "	28	5.1	4.0	313	28	5.3	4.0	325	28	6.1	3.2	272	28	6.1	2.2	273	28	7.0	1.4	271	27	7.5	5.7	300				
3.0 "	26	8.0	7.0	310	25	4.8	3.3	303	28	7.7	4.9	265	28	7.0	3.7	262	28	7.1	4.7	252	26	8.8	6.5	300				
3.6 "	24	8.6	7.9	300	2	7.7	7.7	297	21	8.2	6.6	271	28	7.5	5.5	265	22	6.9	5.4	270	15	7.3	5.9	295				
4.5 "	24	12.6	10.8	290					14	10.3	8.8	267	28	10.1	9.0	271	10	9.1	8.6	271	3	9.2	6.2	272				
5.4 "	24	14.8	13.6	275					3	15.8	15.4	265	27	13.1	11.6	275	4	14.6	13.3	254								
6.0 "	24	18.0	16.5	270					1	21.0	21.0	235	27	15.7	14.2	273	2	16.3	14.1	266								
7.2 "	16	21.6	20.7	262									22	21.1	19.2	267												
9.0 "	1	35.5	35.5	240									13	36.6	34.0	272												

TABLE IV.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

February 1963 (Māgha 12—Pūshyama 9, 1963—Saka)

Station	BIKANER								BOMBAY/SANTA CRUZ																			
	1730				2330				0530*				1130				1730*				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.9	0.6	328	28	0.9	0.5	045	28	1.1	0.8	028	28	0.6	0.2	077	28	5.3	5.1	317	28	0.7	0.5	029				
0.15 a.g.	28	3.1	2.1	329	28	6.8	4.2	040	28	5.5	4.4	029	28	2.4	1.3	075	28	6.9	6.5	328	28	5.1	4.8	358				
0.3 a. m. s. l.	28	2.9	1.9	330	28	5.7	3.6	041	28	5.2	4.5	029	28	3.3	2.2	073	28	5.9	5.2	329	28	5.5	5.1	352				
0.6 "	28	3.7	2.4	326	28	5.6	3.0	032	28	5.0	3.1	029	28	4.0	2.8	077	28	4.0	2.8	322	28	5.8	4.7	353				
0.9 "	28	3.8	2.6	324	28	4.3	1.5	360	28	5.2	3.2	047	28	4.4	3.1	073	28	3.3	1.7	007	28	5.4	3.5	357				
1.5 "	28	3.9	2.4	298	28	4.1	2.1	260	28	4.2	1.8	057	28	3.7	1.3	029	28	3.7	1.4	070	28	4.1	1.2	015				
2.1 "	28	5.2	3.7	280	28	5.9	4.2	261	28	4.5	0.7	135	28	4.5	1.2	173	28	4.5	1.5	143	28	4.5	2.1	117				
3.0 "	28	7.1	5.4	273	28	7.3	5.9	272	28	5.3	2.9	203	28	6.1	2.9	187	28	6.1	2.5	169	28	6.3	3.7	142				
3.6 "	28	9.3	7.8	273	14	7.6	6.2	290	28	6.6	2.2	206	28	6.6	3.0	237	28	5.3	1.6	233	25	6.2	2.6	187				
4.5 "	27	11.7	10.7	282	2	8.5	8.2	274	28	8.0	3.7	244	28	8.6	5.2	266	28	6.7	4.3	270	17	7.7	6.2	246				
5.4 "	24	13.7	12.1	284	1	7.0	7.0	280	28	10.8	7.0	276	28	11.9	9.2	272	28	9.2	7.0	280	7	9.9	8.6	249				
6.0 "	20	15.5	14.1	286					28	12.6	9.0	280	28	13.7	11.1	274	28	10.2	8.7	275	7	11.1	9.9	257				
7.2 "	8	18.0	12.2	257					28	16.9	14.2	290	23	20.3	18.5	261	28	17.6	15.7	277	1	23.0	23.0	275				
9.0 "									27	28.1	23.6	277	12	27.3	26.2	260	26	28.9	26.2	273								

Station	CALCUTTA/DUM DUM								COCHIN/WILLINGDON†																			
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.6	0.4	321	28	1.0	0.8	340	28	0.3	0.2	331	28	0.7	0.4	216	28	1.0	0.9	055	28	3.5	3.0	254				
0.15 a.g.	28	5.2	2.7	339	28	2.8	1.9	329	28	4.0	2.6	295	28	5.6	2.6	249	28	3.1	2.4	074	28	4.8	4.2	259				
0.3 a. m. s. l.	28	5.0	2.7	341	28	3.1	2.1	330	28	3.6	2.4	293	28	5.5	2.8	263	28	2.2	1.3	068	28	4.0	3.3	272				
0.6 "	28	4.8	2.8	338	28	3.6	2.4	320	28	3.8	2.5	293	27	4.4	2.8	295	28	2.0	0.8	038	28	3.2	1.7	340				
0.9 "	28	4.5	2.7	321	28	4.2	2.9	309	28	3.7	2.2	294	27	4.4	3.3	305	28	2.7	1.4	075	28	3.9	2.9	039				
1.5 "	28	5.2	4.3	302	28	5.8	4.8	289	28	4.8	3.9	293	27	6.2	5.5	306	28	3.9	3.0	059	26	5.8	5.5	074				
2.1 "	28	7.8	6.7	296	27	8.1	7.1	286	28	7.3	6.7	298	27	8.6	7.9	306	25	5.1	4.2	092	26	7.3	6.9	085				
3.0 "	28	10.1	9.6	293	26	11.4	10.1	290	28	11.2	10.5	295	23	9.6	9.1	294	23	5.4	4.4	100	23	5.2	4.6	079				
3.6 "	28	11.8	11.2	287	26	13.2	12.5	291	28	12.9	11.5	290	4	9.4	9.1	271	17	4.8	3.6	100	22	4.8	3.5	079				
4.5 "	28	14.2	13.6	282	23	15.6	15.0	282	28	15.7	14.7	284					1	2.0	2.0	150	16	4.4	2.5	048				
5.4 "	28	16.3	15.5	278	19	18.0	17.1	273	28	18.3	17.4	275									9	4.1	1.1	063				
6.0 "	28	18.7	17.6	274	19	20.3	19.3	273	28	20.1	18.8	275									3	4.7	4.5	322				
7.2 "	28	24.8	23.7	268	7	22.7	21.3	267	26	25.4	24.7	268																
9.0 "	26	35.3	33.5	267	11	35.5	35.5	270	26	37.0	35.8	265																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

February 1963 (Magha 12 —Phalguna 9, 1884 Saka)

Station	COCHIN/ WILLINGDON†				DARJEELING								DEHRA DUN								DIBRUGARH/ MOHANBARI			
	2330				0830				1730				0530				1730				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.6	0.3	123	28	CALM			28	0.5	0.5	250	28	0.4	0.3	015	28	0.9	0.8	258	28	1.3	1.2	046
0.15 a.g.	28	2.4	0.6	156	23	1.3	0.8	183	16	2.3	2.1	231	27	1.5	0.7	030	28	2.9	0.8	258	26	5.8	5.5	050
0.3 a.m.s.l.	28	2.5	0.5	143																	26	6.2	5.6	048
0.6 „	28	2.8	1.3	111																	26	4.3	4.0	049
0.9 „	28	3.5	2.6	094									27	1.4	0.5	045	28	2.9	2.2	259	26	3.1	2.2	060
1.5 „	28	4.8	4.5	089									27	1.9	0.7	290	28	2.3	1.1	262	24	2.8	1.3	093
2.1 „	28	6.3	5.9	074									27	3.6	1.8	302	28	3.0	0.8	298	24	4.0	2.6	231
3.0 „	23	6.3	5.8	088	23	4.8	4.1	287	16	3.2	2.7	305	26	4.8	2.2	290	26	4.3	1.2	306	20	5.4	3.8	249
3.6 „	6	4.8	4.1	087	21	10.6	9.6	282	15	5.3	4.2	299	12	6.3	2.9	291	25	4.9	1.4	305	15	7.0	5.6	256
4.5 „	2	4.3	4.3	079	14	10.6	10.4	279	14	10.1	9.8	280	5	6.3	3.2	305	24	7.0	5.0	293	7	7.0	5.5	281
5.4 „	1	4.5	4.5	110	11	13.0	12.6	276	13	15.6	15.3	281	1	6.0	6.0	310	23	10.7	9.5	280	5	9.0	8.5	285
6.0 „	1	3.5	3.5	110	9	14.2	13.5	273	11	15.5	15.1	279					22	12.6	11.8	282	5	16.0	15.2	274
7.2 „					5	19.6	18.3	269	6	18.4	17.9	279					10	15.5	14.6	279	1	25.0	25.9	265
9.0 „					2	38.5	38.5	248	3	36.2	34.3	274					3	23.8	23.0	277				

Station	DIBRUGARH/MOHANBARI												GADAG											
	1130				1730				2330				0530				1730				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.4	0.4	050	28	1.1	0.9	039	28	1.5	1.5	049	28	4.1	3.5	129	28	3.3	2.8	091	28	4.1	3.3	101
0.15 a.g.	28	2.4	2.1	053	27	4.4	3.6	037	25	4.7	0.4	050	28	9.1	8.5	126	28	5.3	4.5	090	28	9.3	7.9	091
0.3 a.m.s.l.	28	2.7	2.5	054	27	4.4	3.6	040	25	4.5	4.3	052												
0.6 „	28	3.2	2.7	056	27	4.4	3.2	053	25	3.9	3.5	056												
0.9 „	28	2.6	1.6	044	27	3.9	2.5	070	25	3.9	2.2	076	28	10.3	9.4	118	28	5.5	4.8	093	28	9.7	8.4	094
1.5 „	28	3.2	2.2	227	27	2.9	1.7	214	25	2.6	1.3	215	28	7.9	7.0	096	28	6.0	5.3	092	28	7.7	7.4	098
2.1 „	25	4.5	4.1	228	26	5.3	4.8	220	24	4.4	3.5	230	28	6.4	5.0	065	28	5.9	5.3	092	28	6.6	6.0	090
3.0 „	21	4.3	3.5	230	21	7.2	6.8	219	21	5.3	5.1	232	26	5.4	4.1	077	28	5.4	4.3	084	27	4.8	3.6	080
3.6 „	16	4.5	2.6	237	16	6.6	5.0	229	12	4.2	2.3	239	25	5.4	2.5	085	28	4.8	2.1	078	26	5.1	2.7	067
4.5 „	13	6.5	4.6	264	10	7.1	4.4	257					25	4.7	0.7	275	28	5.7	1.5	350	21	4.8	1.7	360
5.4 „	11	10.9	9.7	273	7	11.9	10.6	255					23	7.2	4.3	269	26	7.3	3.5	294	14	6.4	3.9	285
6.0 „	10	12.5	11.9	273	7	14.1	13.3	264					23	9.2	6.6	253	26	9.4	5.5	281	10	9.1	7.7	270
7.2 „	7	20.2	19.4	275	3	17.6	17.3	286					20	13.0	10.8	260	23	11.3	8.8	271	5	13.3	9.6	290
9.0 „					1	20.5	20.5	305					15	16.5	14.0	259	18	18.3	16.4	255				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

February 1963 (Magha 12—Phalguna 9, 1884 Saka)

Station	GAUHATI																GAYA											
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.1	0.0	225	28	1.1	0.6	337	28	1.3	0.8	308	28	1.4	0.5	139	28	1.1	0.9	205	28	2.5	1.9	294				
0.15 a. g.	28	1.9	0.5	075	28	2.2	1.4	018	28	3.4	2.4	342	28	3.4	1.4	192	27	5.0	2.6	254	28	5.8	4.8	297				
0.3 a. m. s. l.	28	2.6	0.4	063	28	2.3	1.1	016	28	3.4	2.4	340	28	3.1	1.0	205	27	5.0	2.5	274	28	5.4	4.7	296				
0.6 "	28	3.6	0.6	304	28	3.1	0.4	307	28	3.1	1.8	308	28	3.1	1.3	254	27	5.4	3.5	312	28	6.5	5.3	294				
0.9 "	28	4.0	1.5	255	28	4.0	2.2	245	28	2.5	1.9	274	28	3.8	2.8	266	27	5.7	4.4	306	28	7.1	6.6	289				
1.5 "	28	4.4	3.2	264	28	5.9	4.1	249	28	4.6	4.4	246	28	4.8	4.1	260	27	8.3	7.3	285	28	9.1	8.6	286				
2.1 "	28	6.0	4.8	264	28	7.6	6.2	252	28	7.3	6.9	240	27	6.4	5.8	260	26	10.7	9.8	285	27	11.1	10.7	285				
3.0 "	28	9.2	8.0	266	28	11.2	9.5	268	28	9.6	8.7	255	20	7.5	6.7	270	22	12.1	11.1	285	23	13.0	12.6	285				
3.6 "	28	12.3	11.6	280	26	13.5	12.2	275	28	11.7	11.1	272	3	11.2	10.7	271	10	10.3	9.8	287	16	13.1	12.6	284				
4.5 "	28	16.7	16.4	277	25	17.3	16.9	275	28	15.5	15.3	273					7	10.2	9.8	282	13	13.7	13.1	288				
5.1 "	28	19.3	19.0	275	23	18.6	17.6	272	28	20.6	20.0	273					2	14.0	14.0	278	11	15.3	14.5	288				
6.0 "	28	20.6	20.0	274	18	19.5	19.0	271	28	22.8	22.3	274									9	14.8	14.1	278				
7.2 "	27	27.8	27.1	275	15	25.1	24.7	275	27	27.6	26.4	275									3	18.0	17.7	273				
9.0 "	19	45.7	44.5	272	2	38.7	38.6	295	22	40.0	38.5	272									1	32.0	32.0	275				

Station	GAYA				GOPALPUR								GORAKHPUR															
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	1.2	0.9	248	28	2.4	2.0	315	28	4.7	3.2	172	28	2.7	2.0	223	28	0.8	0.5	277	28	1.3	1.1	265				
0.15 a. g.	28	5.8	3.7	290	27	3.9	1.7	274	28	6.1	4.8	169	28	5.5	4.5	199	28	6.1	5.3	294	28	5.0	4.4	277				
0.3 a. m. s. l.	28	6.1	4.2	295	27	3.8	2.2	211	28	6.1	4.5	161	28	5.4	4.4	193	28	7.0	6.2	297	28	5.8	5.2	270				
0.6 "	28	6.8	5.5	297	27	3.8	1.7	202	28	4.1	2.6	142	28	4.5	3.4	178	28	7.5	6.9	299	28	7.3	6.8	272				
0.9 "	28	7.3	6.7	296	27	4.0	1.0	196	28	3.4	0.5	092	28	3.8	1.9	176	28	7.4	6.7	295	28	8.2	7.8	274				
1.5 "	28	8.8	8.1	289	27	4.6	1.8	014	28	3.8	2.1	332	28	4.2	0.8	001	28	8.0	7.7	289	28	9.9	9.5	287				
2.1 "	25	10.2	9.7	283	27	4.2	2.1	359	28	5.1	4.1	320	26	4.5	3.2	334	28	10.1	9.6	283	28	10.9	10.7	290				
3.0 "	14	10.9	9.7	280	26	4.3	2.3	320	28	6.1	5.0	314	26	5.0	3.9	323	24	10.4	9.9	289	27	12.1	11.7	292				
3.6 "	2	8.7	7.9	275	25	5.6	4.0	287	27	7.1	6.0	302	5	7.4	6.3	268	22	12.3	11.7	283	27	13.6	12.9	291				
4.5 "					23	8.8	7.5	270	26	9.6	8.7	282					13	12.7	12.1	290	24	14.6	14.2	291				
5.4 "					14	12.7	11.0	267	25	12.8	11.7	278					6	13.8	11.4	283	21	16.2	15.8	285				
6.0 "					9	14.7	13.0	263	25	16.1	14.4	271					2	13.7	13.7	276	18	16.5	16.1	282				
7.2 "					3	21.6	21.5	244	25	16.0	15.0	258					1	14.0	14.0	270	9	16.0	15.0	280				
9.0 "									4	25.4	24.3	253									2	21.5	19.5	274				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level.

February 1963 (Magha 12—Phalgun 9, 1884 Saka)

Station	GWALIOR																IMPHAL/TULIHAL							
	0530				1130				1730				2330				0530				1130			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.7	0.2	329	28	1.3	0.1	275	28	1.6	1.0	343	28	0.6	0.3	018	28	0.6	0.5	041	28	1.8	1.0	259
0.15 a. g.	28	4.0	1.6	027	28	2.6	0.4	185	28	3.4	2.4	347	28	5.3	3.5	036	28	1.6	1.0	051	28	2.3	1.3	256
0.3 a. m. s. l.	28	3.2	0.7	347	28	2.5	0.4	029	28	3.1	2.2	347	28	4.3	2.5	036								
0.6 "	28	4.5	1.7	022	28	3.3	0.4	309	28	3.4	2.3	339	28	5.5	3.3	016								
0.9 "	28	4.3	2.2	340	28	3.8	1.6	305	28	3.3	2.4	324	28	5.6	2.2	340	28	1.6	1.2	049	28	2.4	1.1	256
1.5 "	28	5.6	4.0	300	28	5.9	4.1	287	28	4.4	3.3	288	28	6.6	3.9	286	28	3.6	1.8	269	28	3.4	2.8	253
2.1 "	28	8.0	6.8	286	28	7.3	6.1	283	28	6.7	5.8	283	28	6.9	6.0	281	27	6.1	5.3	263	28	7.0	5.9	255
3.0 "	28	10.0	9.4	284	28	9.1	8.4	279	28	11.0	10.2	276	28	11.3	10.0	279	12	8.3	7.5	278	23	10.5	9.6	274
3.6 "	28	12.7	11.4	279	26	11.9	11.0	274	28	14.3	13.0	274	13	11.5	9.5	287	4	13.5	13.3	278	20	14.3	12.4	279
4.5 "	26	14.3	13.3	280	26	14.6	13.4	274	27	15.9	14.7	273					1	22.5	22.5	275	11	15.0	14.6	276
5.4 "	23	16.7	15.7	278	24	16.9	15.5	276	27	18.5	17.0	276									5	17.0	16.8	276
6.0 "	23	17.3	16.5	277	24	17.7	16.7	274	25	19.7	17.9	279									2	13.0	10.6	284
7.2 "	19	20.8	20.1	274	21	19.7	18.8	277	23	21.3	19.8	277									2	20.0	17.4	282
9.0 "	6	19.8	19.2	268	9	19.3	16.9	277	8	22.5	21.1	292												

Station	IMPHAL/TULIHAL								JABALPUR								JAGDALPUR								
	1730				2330				0530				1730				2330				0530				
Time in I.S.T.																									
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	
Surface.	28	3.5	2.6	278	28	1.3	0.2	003	28	1.0	0.7	115	28	1.5	0.6	006	28	1.0	0.4	090	28	C	A	L	M
0.15 a.g.	28	5.3	4.5	274	28	2.7	0.8	267	28	4.9	2.8	107	28	3.7	1.5	357	28	5.7	2.2	072	28	3.3	1.2	208	
0.3 a. m. s. l.																									
0.6 "																									
0.9 "	28	4.9	4.2	274	28	2.4	0.5	253	28	5.0	2.8	099	28	3.9	1.9	358	28	6.0	1.9	070	28	1.4	0.6	206	
1.5 "	28	5.1	4.7	260	28	5.2	4.4	257	28	5.0	1.0	096	28	4.3	1.9	334	28	5.7	1.3	061	28	4.3	0.8	191	
2.1 "	28	5.8	5.4	258	23	7.3	6.7	258	28	6.3	3.2	264	28	4.5	2.6	311	28	4.5	1.5	265	28	4.3	1.4	021	
3.0 "	18	8.5	7.8	269	11	7.5	6.6	261	28	8.7	6.1	273	28	5.7	4.3	288	28	6.6	4.3	262	28	4.6	2.6	009	
3.6 "	13	13.7	13.5	277	4	8.5	8.1	271	28	9.9	7.9	279	28	10.2	8.5	277	27	9.5	7.8	278	28	5.2	2.1	002	
4.5 "	5	19.2	18.6	277	1	11.0	11.0	280	23	10.4	8.8	290	28	11.1	9.8	278	16	10.6	7.6	282	27	5.4	3.0	306	
5.4 "	3	23.0	22.6	273					20	11.4	10.0	287	28	13.2	12.1	276	5	9.6	7.6	285	26	7.6	6.2	282	
6.0 "	3	26.7	26.2	268					12	12.0	10.8	276	25	15.3	14.0	281					23	11.2	9.7	274	
7.2 "	1	35.0	35.0	265					9	14.8	12.4	069	23	17.4	16.5	283					19	14.2	13.1	263	
9.0 "									1	20.0	20.0	285	14	22.4	21.5	276					7	21.0	20.5	264	
													2	33.5	32.7	270					1	32.5	32.5	250	

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

February 1963 (Magha 12—Phalguna 3, 1984 Saka)

Station	JAGDALPUR				JAIPUR/SANGANER				JAMSHEDPUR															
	1730		2330		0530		1730		2330		0530													
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D												
Surface	28	1.3	0.6	339	28	0.4	0.2	179	28	1.4	1.1	065	28	2.0	1.3	313	28	1.5	1.0	039	28	1.0	0.9	301
0.15 a. g.	28	3.1	1.2	007	27	5.1	2.1	205	28	5.3	2.3	062	28	3.4	1.9	295	28	5.0	2.0	039	28	3.3	2.6	295
0.3 a. m. s. l.																	28	3.3	1.9		28	3.3	1.9	293
0.6 "	28	2.3	0.8	355	27	3.5	1.7	208	28	5.3	1.7	061	28	3.5	1.8	292	28	4.8	1.9	035	28	3.9	1.3	305
0.9 "	28	3.1	1.3	006	27	5.4	1.8	208	28	4.9	1.4	312	28	3.2	2.1	298	28	4.5	1.1	360	28	4.9	2.4	290
1.5 "	28	3.2	1.4	009	27	4.2	1.0	287	28	5.1	3.7	288	28	3.7	2.4	297	28	4.7	1.6	340	28	6.0	4.7	283
2.1 "	28	3.1	1.5	012	27	2.9	0.6	024	28	6.5	5.3	281	28	5.2	3.7	296	28	5.7	4.4	281	28	9.3	8.2	282
3.0 "	27	4.9	1.9	003	27	4.6	2.7	345	27	9.7	8.3	278	28	9.1	7.7	275	28	9.2	7.3	274	24	11.5	10.3	295
3.6 "	26	5.5	3.8	309	11	7.3	5.6	286	18	11.3	9.9	269	28	12.5	10.4	275	25	10.0	8.3	281	17	12.0	11.2	290
4.5 "	26	8.8	7.5	286	1	8.0	8.0	235					24	14.5	12.9	273	5	11.6	11.0	280	7	10.9	10.7	278
5.4 "	26	12.1	10.8	281									21	17.2	15.3	272	2	11.3	10.4	258	3	17.7	17.6	260
6.0 "	23	15.0	13.7	277									13	16.4	14.6	279								
7.2 "	13	21.0	20.1	265									4	22.1	21.4	274								
9.0 "	2	34.7	34.5	250									1	31.0	31.0	270								

Station	JAMSHEDPUR				JHARSUGUDA				JODHPUR															
	1730		0530		1730		2330		0530*		1130													
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D												
Surface	28	2.2	1.1	313	27	0.9	0.8	029	28	1.7	0.9	239	28	1.5	0.9	057	28	2.5	2.1	048	28	1.9	1.2	084
0.15 a. g.	28	4.0	1.7	323	27	4.5	3.3	052	28	3.0	1.6	238	28	5.1	1.1	064	28	5.4	3.7	035	28	3.1	1.6	081
0.3 a. m. s. l.	28	4.0	1.6	318	27	3.9	3.1	049	28	2.9	1.5	239	28	4.2	1.3	063	28	4.4	3.8	050	28	2.7	1.3	069
0.6 "	28	4.2	2.1	302	27	4.9	2.0	086	28	3.5	2.0	247	28	4.9	0.9	024	28	4.5	3.1	045	28	3.8	1.4	076
0.9 "	28	4.5	2.8	296	27	5.5	0.5	132	28	3.8	2.2	260	28	4.3	0.9	290	28	4.4	1.1	027	28	4.1	1.2	046
1.5 "	28	5.0	3.8	281	27	5.3	3.3	273	28	4.5	3.1	291	28	3.9	2.4	281	28	5.4	2.5	296	28	4.7	2.3	323
2.1 "	28	7.4	6.3	289	27	6.8	5.0	290	28	6.2	4.6	301	28	5.3	3.3	287	28	6.4	4.4	279	28	6.1	2.9	296
3.0 "	26	11.5	10.6	292	27	8.7	7.1	299	28	8.9	7.4	300	28	7.7	6.5	288	28	8.5	6.5	265	28	7.9	6.0	266
3.6 "	26	13.8	13.0	286	27	9.9	9.0	291	28	16.6	9.4	293	18	7.3	6.0	279	25	9.1	7.8	260	28	9.5	7.9	264
4.5 "	18	18.1	17.5	285	25	11.9	11.2	286	24	13.7	12.9	282					25	11.7	10.2	264	26	11.9	9.3	267
5.4 "	12	19.3	17.8	278	16	14.2	13.2	282	22	17.0	15.8	281					24	15.1	13.0	267	25	14.9	13.2	272
6.0 "	5	18.9	17.8	288	5	17.7	16.8	285	21	19.4	18.1	275					24	17.4	15.2	269	24	17.0	15.1	270
7.2 "					1	17.0	17.0	285	17	23.4	22.1	280					28	22.5	19.8	270	15	18.5	17.0	270
9.0 "									4	46.6	31.7	273					21	33.5	30.5	268	8	22.4	20.8	270

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

February 1963 (Magha 12—Phalgun 9, 1884 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MADRAS/ MINAMBAKKAM							
	1730*				2330				0530				1730				2330				0530*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	3.1	1.4	007	28	2.2	1.5	022	28	2.1	1.5	289	28	3.4	2.6	286	28	1.9	1.3	286	28	0.7	0.6	022				
0.15 a. g.	28	4.6	3.8	360	28	5.8	3.4	027	28	7.2	6.0	323	28	5.0	4.1	294	28	6.9	5.6	311	28	4.5	4.0	047				
0.3 a. m. s. l.	28	3.9	3.1	003	28	5.5	3.2	030	28	7.5	6.2	322	28	5.0	4.0	290	28	6.9	5.6	312	28	4.5	4.0	053				
0.6 "	28	3.9	2.6	351	28	6.4	3.4	030	28	6.4	5.6	314	28	5.5	4.6	290	28	7.4	6.4	314	28	4.4	3.6	076				
0.9 "	28	3.5	1.4	335	28	5.8	2.6	036	28	6.9	6.6	306	28	5.6	5.0	290	28	6.7	6.2	306	28	6.1	5.4	083				
1.5 "	28	3.4	1.2	330	28	4.9	0.6	030	28	7.8	7.8	295	28	7.3	7.0	295	28	6.8	6.6	300	28	7.6	6.7	081				
2.1 "	28	4.6	1.9	285	28	5.3	2.6	302	26	8.6	7.9	297	28	9.3	8.0	291	24	8.0	7.2	288	28	6.3	5.1	094				
3.0 "	28	6.5	4.6	266	27	6.8	4.5	270	21	9.3	8.9	285	28	11.7	10.9	285	19	9.6	7.8	292	28	4.7	4.0	102				
3.6 "	28	9.3	7.2	264	16	7.9	6.4	274	8	11.1	7.9	277	26	12.9	12.1	289	7	9.6	8.4	270	28	4.4	3.1	102				
4.5 "	28	12.1	10.2	269	2	14.3	14.1	241	1	20.0	20.0	295	25	14.7	14.6	285					28	4.6	1.7	083				
5.4 "	27	15.5	13.5	273									20	15.5	14.6	281					28	4.4	0.9	228				
6.0 "	27	17.7	15.6	270									19	16.7	16.0	280					27	4.5	2.5	247				
7.2 "	27	21.9	20.0	269									15	18.1	16.7	278					27	7.8	5.3	258				
9.0 "	26	28.7	25.7	264									7	20.8	20.7	272					27	11.2	8.8	243				

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE															
	1130				1730*				2330				0530				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	3.1	2.5	051	28	3.7	3.2	073	28	2.3	1.9	063	28	2.0	1.8	088	28	3.9	3.7	269	28	1.1	0.5	013				
0.15 a. g.	28	4.4	3.6	060	28	6.3	5.8	062	28	5.4	4.9	072	28	5.6	4.9	086	28	4.8	4.6	275	28	4.1	3.0	346				
0.3 a. m. s. l.	28	4.5	3.8	059	28	5.9	5.5	061	28	5.8	5.3	073	28	6.4	5.7	089	28	4.7	4.3	274	28	4.0	3.0	345				
0.6 "	28	4.2	3.7	062	28	5.0	4.4	063	28	6.5	5.9	073	28	6.3	5.6	095	28	2.9	1.4	301	28	3.8	2.3	352				
0.9 "	28	5.0	4.3	071	28	5.1	4.4	073	28	7.1	6.4	080	28	5.7	4.7	102	28	2.1	0.8	034	28	3.3	1.8	019				
1.5 "	25	8.2	7.4	072	28	7.3	6.6	077	28	7.2	6.3	078	27	5.3	4.2	095	28	5.8	5.3	083	28	4.9	4.2	077				
2.1 "	20	7.3	6.6	082	28	6.0	5.0	083	28	6.0	5.1	083	27	5.0	3.6	095	28	8.1	7.9	082	28	8.3	8.0	086				
3.0 "	16	4.8	4.3	092	28	4.8	4.0	089	28	4.7	4.1	085	27	5.4	4.0	086	28	5.1	4.2	081	28	7.8	7.5	087				
3.6 "	14	5.0	3.4	099	28	4.5	3.0	090	18	4.3	2.9	095	27	4.8	3.1	079	28	4.7	3.3	063	25	5.5	3.7	089				
4.5 "	14	4.6	1.7	113	28	4.2	1.1	097	12	4.1	1.7	083	26	4.8	1.5	055	28	5.3	1.7	059	14	5.2	2.8	050				
5.4 "	12	4.5	0.7	276	28	5.7	2.2	258	5	4.9	2.2	326	26	5.7	1.7	260	28	5.3	1.2	303	4	5.9	2.7	275				
6.0 "	12	5.5	2.9	243	28	5.6	3.2	266	5	3.7	1.6	297	26	6.7	2.7	266	28	6.6	2.7	265	2	7.0	6.9	250				
7.2 "	8	7.8	5.4	237	28	7.4	5.1	276	2	5.5	3.1	325	20	9.4	6.7	257	26	9.4	6.5	273								
9.0 "	7	11.0	8.0	214	27	12.1	10.2	240					11	13.2	11.7	221	23	11.9	9.9	246								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

February 1963 (Magha 12—Phalgun 9, 1884 Saka)

Station	MINICOY												NAGPUR/SONEGAON															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface.	28	0.9	0.5	043	28	1.4	1.1	036	28	1.2	0.8	035	28	1.1	0.8	030	28	1.6	0.9	146	28	1.1	0.3	283				
0.15 a. g.	28	2.8	1.7	043	28	3.8	3.3	030	28	3.4	2.6	046	28	5.1	2.9	090	28	2.7	0.9	196	28	3.0	0.7	246				
0.3 a. m. s. l.	28	2.8	1.9	062	28	4.3	3.9	028	28	3.3	2.9	054																
0.6 "	28	3.3	2.6	078	28	4.9	4.3	041	28	3.7	3.3	063	28	5.4	2.0	092	28	3.2	1.4	169	28	3.1	0.7	257				
0.9 "	28	4.7	4.1	089	28	5.1	4.7	053	28	4.9	4.5	073	28	5.8	1.8	127	28	4.1	2.3	187	28	3.1	1.6	210				
1.5 "	27	7.1	6.7	086	28	6.1	5.7	075	28	6.5	6.0	076	28	5.7	2.2	219	28	5.3	2.5	235	28	3.4	1.2	229				
2.1 "	23	6.9	6.3	092	28	6.0	5.2	085	26	6.5	5.9	077	28	5.7	2.3	251	28	5.9	2.4	267	28	4.2	1.5	270				
3.0 "	22	4.8	4.1	094	25	5.5	4.4	079	25	5.8	5.0	086	28	7.0	4.7	287	28	7.0	4.4	297	28	5.4	3.6	297				
3.6 "	22	4.4	3.8	095	23	5.0	4.5	083	13	4.7	3.9	093	28	7.9	6.3	289	28	7.5	5.7	293	28	6.8	5.3	294				
4.5 "	19	5.0	2.4	094	20	5.0	3.5	077	4	5.0	2.3	080	28	10.8	9.0	284	25	10.5	9.3	282	28	10.6	9.5	276				
5.4 "	16	4.8	3.0	104	18	4.0	1.5	096	2	4.3	1.5	360	28	12.8	11.4	276	25	14.2	12.9	276	28	12.9	11.6	276				
6.0 "	15	6.2	3.0	116	18	4.3	1.3	082	1	3.0	3.0	330	28	14.9	13.7	273	23	17.6	16.6	271	28	14.7	13.5	272				
7.2 "	10	7.7	4.1	163	17	5.8	0.9	102					28	20.4	18.6	262	23	23.9	22.8	264	28	20.2	18.3	261				
9.0 "	7	8.1	5.7	146	13	7.6	4.1	205					28	30.9	30.0	257	8	35.5	34.8	251	28	30.3	28.7	262				

Station	NAGPUR/SONEGAON												NEW DELHI/SAFDARJUNG												POONA			
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface.	28	1.4	0.8	025	28	2.2	1.8	323	28	3.0	2.1	302	28	2.4	2.0	302	28	1.8	1.1	343	28	C	A	L	M			
0.15 a. g.	28	6.3	3.0	080	28	5.4	4.8	328	27	3.4	2.3	307	28	5.7	4.4	302	28	7.1	5.0	347	28	2.2	0.9	108				
0.3 a. m. s. l.					28	5.2	4.5	325	27	3.1	2.1	320	28	4.5	3.4	306	28	6.2	4.5	341								
0.6 "	28	6.3	3.0	092	28	5.9	5.5	323	27	4.8	3.7	300	28	5.7	4.3	304	28	6.8	5.5	327	28	1.4	0.7	209				
0.9 "	28	5.5	2.2	115	28	6.3	5.2	309	27	5.7	4.7	303	28	5.4	4.0	302	28	6.9	5.9	309	28	3.0	1.7	095				
1.5 "	28	5.8	1.6	200	28	7.4	6.7	295	27	6.2	5.2	298	28	5.7	4.6	299	28	7.8	6.7	293	28	5.2	3.2	089				
2.1 "	28	5.9	2.3	252	27	8.1	7.2	297	27	6.9	5.5	291	28	6.6	5.8	293	27	8.0	6.8	291	28	5.3	2.9	115				
3.0 "	27	6.7	4.5	278	27	8.5	6.8	295	27	8.1	6.2	279	28	8.0	6.7	284	23	7.6	7.0	295	28	5.4	2.5	156				
3.6 "	24	7.9	6.5	281	27	9.5	7.9	287	27	9.7	8.6	280	28	9.2	8.0	283	2	15.7	13.0	327	25	5.5	2.2	233				
4.5 "	7	10.1	9.0	267	28	11.8	10.3	274	26	11.7	10.8	275	28	12.0	11.0	281					18	6.8	5.5	282				
5.4 "	2	9.7	9.0	255	28	14.9	13.6	270	25	15.3	14.4	277	28	14.6	13.3	277					11	9.4	8.1	279				
6.0 "	2	14.7	14.0	260	28	15.6	14.7	271	23	16.2	15.7	275	28	16.6	15.0	278					2	7.5	7.5	285				
7.2 "					28	18.9	17.8	272	14	20.4	19.6	273	28	19.6	18.5	273												
9.0 "					25	26.1	24.8	271	3	12.2	10.7	273	28	25.4	24.3	272												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

February 1963 (Magha 12—Phalguna 9, 1884 Saka)

Station	POONA								PORT BLAIR															
	1730				2330				0530*				1130				1730*				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	0.3	0.1	255	28	0.1	0.1	090	28	1.2	1.1	061	28	3.0	2.8	067	28	1.7	1.6	063	28	2.9	2.7	066
0.15 a. g.	28	3.1	0.1	272	28	4.3	0.8	305	28	5.6	5.3	063	28	5.5	5.1	064	28	5.9	5.3	066	28	5.7	5.5	063
0.3 a. m. s. l.									28	5.6	5.3	063	28	5.8	5.5	065	28	5.9	5.5	064	28	5.9	5.6	062
0.6 „	28	1.9	0.2	003	28	1.9	1.1	237	28	6.3	5.9	075	27	7.0	6.6	076	28	5.9	5.6	065	28	6.2	5.9	069
0.9 „	28	3.3	0.2	272	28	5.3	1.9	330	28	7.3	6.8	088	26	7.8	7.4	085	28	6.4	6.1	076	27	6.8	6.4	081
1.5 „	28	3.2	0.4	147	28	5.3	1.3	003	28	8.3	7.7	095	24	8.2	7.8	094	28	7.4	7.0	087	19	5.9	5.4	093
2.1 „	28	3.6	0.4	175	28	5.3	2.9	104	28	7.7	7.3	093	17	6.5	6.1	090	28	6.7	6.4	091	12	5.5	4.5	088
3.0 „	28	4.1	0.5	197	28	6.0	4.5	121	28	6.7	5.5	087	12	4.8	3.0	080	27	6.1	4.9	080	7	4.9	3.4	088
3.6 „	28	5.0	1.5	235	26	5.6	3.3	169	28	5.0	3.6	096	12	4.0	2.2	089	27	4.7	3.1	091				
4.5 „	28	6.3	3.1	266	19	6.9	5.4	156	28	4.5	2.0	135	10	4.3	1.0	171	27	4.3	1.0	113				
5.4 „	27	9.1	6.7	266	10	9.8	8.7	274	28	4.8	0.9	172	9	4.3	1.7	213	27	4.5	1.1	154				
6.0 „	27	12.3	10.3	265	7	12.1	11.6	261	28	5.0	1.2	140	8	4.8	1.4	163	28	5.2	1.1	149				
7.2 „	22	18.3	16.3	265					28	6.1	0.9	160	6	6.1	1.2	110	28	5.9	1.2	149				
9.0 „	11	26.5	25.9	257					23	7.3	3.9	230					20	7.4	1.9	211				

Station	RAIPUR												RAXAUL								SILIGURI/ BAGHDUGRA			
	0530				1730				2330				0630				1630				0530			
Time in I. S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	1.3	0.4	338	28	1.5	0.9	343	28	1.5	0.3	072	28	0.5	0.0	135	28	1.7	1.6	256	28	1.2	0.9	041
0.15 a. g.	27	4.8	1.9	032	28	2.7	1.5	321	28	4.1	1.3	026	28	4.3	0.9	269	28	5.1	4.8	265	28	3.6	3.1	066
0.3 a. m. s. l.													28	4.5	1.3	272	28	5.5	5.2	267	28	3.7	3.4	068
0.6 „	27	5.0	1.7	072	28	2.7	1.5	322	28	3.9	1.5	018	28	4.4	2.8	281	28	5.9	5.6	267	28	4.4	3.8	075
0.9 „	27	4.7	0.7	097	28	3.0	1.7	305	28	3.7	0.7	337	28	4.5	3.0	286	28	6.1	5.7	268	28	3.6	2.7	080
1.5 „	27	4.9	1.7	271	28	3.8	2.4	300	28	3.6	1.7	287	28	5.7	4.4	284	27	5.8	5.3	273	28	3.0	0.8	091
2.1 „	27	6.2	3.2	297	28	5.6	3.2	291	28	5.1	2.8	288	28	8.8	7.3	281	26	7.4	6.9	287	27	4.9	3.3	274
3.0 „	27	8.0	5.5	298	28	7.5	5.2	295	26	6.8	4.3	281	24	10.8	10.2	286	22	10.2	9.7	288	25	10.5	9.8	284
3.6 „	25	9.6	7.6	291	28	8.6	6.6	287	12	7.2	5.5	267	21	11.3	10.5	287	16	10.2	9.3	281	20	12.2	11.8	285
4.5 „	19	10.1	8.8	283	25	11.4	9.5	276	1	11.5	11.5	265	13	10.9	10.1	291	12	9.5	8.7	284	12	11.6	11.3	281
5.4 „	10	13.1	11.5	268	22	14.9	13.0	273					11	11.4	10.7	276	8	10.0	9.4	285	6	11.6	11.3	266
6.0 „	8	16.3	15.3	270	22	17.3	15.2	273					7	11.4	11.0	273	7	12.4	11.6	289	4	12.4	11.5	277
7.2 „	1	16.5	16.5	285	9	19.8	18.9	268					6	12.2	12.0	266	4	11.3	10.6	280	1	18.0	18.0	285
9.0 „													1	23.5	23.5	255	3	18.3	17.6	267				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

February 1963 (Magha 12—Phalgun 9, 1884 Saka)

Station	SILIGURI/BAGHDOGRA								SRINAGAR								TIRUCHCHIRAPPALLI											
	1730				2330				0530*				1730*				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	1.7	1.4	238	28	1.5	1.3	359	25	0.8	0.3	142	24	0.9	0.4	296	28	2.3	2.1	017	28	4.3	3.9	074				
0.15 a. g.	28	3.3	2.7	236	28	2.8	1.5	009	25	1.6	0.4	138	24	1.4	0.5	302	28	6.2	5.8	030	28	5.8	5.6	071				
0.3 a. m. s. l.	28	3.3	2.7	239	28	2.7	0.8	345									28	6.8	6.4	035	28	6.1	5.9	071				
0.6 "	28	4.2	3.6	243	28	3.7	2.0	288									28	7.3	6.9	055	28	6.6	6.3	068				
0.9 "	28	4.3	3.8	245	28	3.3	2.0	291									28	7.2	6.7	066	28	7.1	6.8	065				
0.5 "	28	4.2	3.8	256	28	3.5	1.5	275									27	7.5	6.8	077	28	7.4	6.9	057				
2.1 "	27	4.1	3.4	275	28	4.6	3.4	272	25	1.4	0.5	149	24	1.3	0.4	307	26	6.9	6.4	083	28	6.7	6.1	063				
3.0 "	25	7.1	6.3	293	23	7.4	6.8	277	25	2.1	1.1	158	24	2.1	1.3	153	23	6.2	5.6	092	28	5.5	5.2	085				
3.6 "	22	6.2	6.0	298	6	10.2	9.7	283	25	2.7	1.9	158	24	3.1	2.2	159	22	5.1	4.2	091	27	5.3	4.3	091				
4.5 "	19	14.7	14.6	283					25	4.1	2.3	189	24	5.0	3.1	209	18	3.1	1.3	063	26	4.1	2.1	068				
5.4 "	18	17.6	17.3	286					25	7.3	4.7	240	24	6.9	5.0	237	15	3.3	0.4	154	25	4.2	1.5	085				
6.0 "	15	17.5	17.1	286					25	10.0	7.7	258	23	9.0	7.3	263	15	3.9	1.0	136	24	4.4	1.3	108				
7.2 "	5	17.3	16.6	280					24	13.8	11.5	269	23	13.7	12.2	272	13	7.8	3.2	248	21	7.2	1.8	262				
9.0 "	1	27.0	27.0	305					21	19.9	16.6	272	20	21.9	19.1	274	11	8.7	5.5	223	19	8.8	3.6	201				

Station	TIRUCHCHIRAPPALLI				TRIVANDRUM												UDAIPUR											
	2330				0530*				1130				1730*				2330				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	28	3.5	3.1	064	28	1.8	1.0	042	28	1.1	0.3	345	28	2.6	2.3	238	28	1.2	0.9	346	28	0.2	0.2	360				
0.15 a. g.	28	8.1	7.7	064	28	3.2	1.8	041	28	2.6	1.1	295	28	4.3	3.9	247	28	2.8	1.8	319	28	3.6	2.4	012				
0.3 a. m. s. l.	28	8.7	8.2	064	28	3.1	1.7	048	28	2.6	1.1	285	28	4.3	3.8	244	28	2.8	1.6	323								
0.6 "	28	9.4	9.0	064	28	3.4	1.8	097	28	2.0	1.0	340	28	3.2	1.4	251	28	3.1	1.9	022								
0.9 "	28	8.7	8.2	060	28	3.6	2.6	084	28	2.6	2.0	043	28	4.6	2.8	055	28	4.8	4.2	054	28	4.0	1.5	062				
1.5 "	27	7.8	7.2	063	28	4.8	3.4	088	23	3.8	3.3	065	28	8.0	7.5	064	27	6.8	6.6	065	28	5.1	0.5	048				
2.1 "	27	6.8	6.3	077	28	5.7	4.7	109	19	5.6	4.6	097	28	7.3	6.8	068	26	7.1	6.4	077	28	6.1	3.9	257				
3.0 "	27	5.7	5.2	087	28	5.3	4.0	110	16	5.7	4.8	102	28	6.4	5.0	084	23	5.7	5.1	095	27	8.8	7.2	271				
3.6 "	25	4.6	3.6	091	28	5.5	4.0	094	15	6.0	5.4	092	28	6.6	5.2	085	17	4.3	3.3	088	20	10.2	8.4	279				
4.5 "	23	3.8	2.4	092	28	5.4	4.0	079	15	6.5	5.6	089	28	6.0	4.1	079	12	5.2	3.5	079	5	9.4	7.9	296				
5.4 "	12	3.8	2.3	146	28	5.2	3.0	097	14	5.5	4.8	089	28	6.2	4.3	086	7	4.7	2.6	105	3	13.2	13.1	300				
6.0 "	8	5.4	1.5	181	28	5.6	3.3	083	14	6.0	4.7	090	28	6.5	4.3	094	3	5.2	3.2	014	2	10.7	10.7	298				
7.2 "	2	11.3	9.5	292	28	8.3	2.4	088	14	6.8	1.9	051	28	8.3	3.3	092	1	1.5	1.5	195								
9.0 "	1	9.0	9.0	245	24	10.3	5.0	155	11	7.3	3.1	129	25	7.7	3.4	161												

TABLE IV--MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

February 1963 (Magha 12--Phalguna 9, 1884 Saka)

Station	VISHAKHAPATNAM											
	1130				1730*				2330			
Time in I. S. T.												
H. in Km.	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	28	2.0	0.7	108	28	2.5	1.2	033	28	0.2	0.1	026
0.15 a. g. . .	27	2.7	1.0	128	28	4.8	2.8	033	28	2.7	0.7	247
0.3 a. m. s. l. . .	28	2.2	0.6	124	28	4.7	2.5	058	28	3.3	0.9	203
0.6 .. .	28	2.1	0.6	088	28	4.6	2.3	116	27	4.1	1.6	156
0.9 .. .	28	3.1	1.8	079	28	4.0	2.2	098	27	4.1	1.7	121
1.5 .. .	27	5.7	3.9	065	28	5.4	3.8	050	28	4.5	2.7	061
2.1 .. .	28	4.8	2.9	067	28	6.0	3.5	028	28	4.8	3.0	050
3.0 .. .	28	4.4	1.8	022	28	4.9	2.3	345	28	4.1	2.2	359
3.6 .. .	27	4.3	2.1	294	28	5.0	3.0	313	25	4.9	2.9	300
4.5 .. .	24	7.0	4.3	272	28	7.5	5.4	280	22	7.5	5.9	284
5.4 .. .	24	10.6	9.0	267	28	11.1	9.6	271	17	10.3	8.2	274
6.0 .. .	22	12.9	11.5	261	28	13.6	11.8	265	10	12.6	11.1	266
7.2 .. .	16	18.1	17.3	257	28	18.7	17.2	257				
9.0 .. .	13	22.8	21.7	253	28	25.5	22.6	257				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 km. above mean sea level

February, 1963 (Magha 12—Phalguna 9, 1884 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	
	AGARTALA					BAHRAICH					BOMBAY/ SANTA CRUZ					1730 hr.*				
	0530 hr.					1130 hr.					0530 hr.*				10.5	12	52.4	50.5	269	
10.5	1	48.0	48.0	250	10.5	6	38.5	37.6	279	10.5	25	32.3	29.8	271	12.0	3	43.8	42.6	269	
	1730 hr.															GOPALPUR				
10.5	1	51.5	51.5	290	12.0	1	52.0	52.0	290	14.1	5	28.3	21.5	252	10.5	2	25.0	23.0	265	
	AHMADABAD					BANGALORE					1130 hr.					GORAKHPUR				
	0530 hr.*					0530 hr.@										1730 hr.				
10.5	23	37.6	33.8	275	10.5	17	11.3	10.0	229	10.5	7	32.5	31.7	259	10.5	1	29.0	29.0	250	
12.0	13	40.5	37.8	273	12.0	15	12.8	9.9	225	12.0	4	30.9	29.7	258		GWALIOR				
14.1	10	40.7	38.1	271	14.1	12	11.5	8.5	251	14.1	3	28.8	26.8	260	10.5	1	20.0	20.0	250	
16.2	4	36.0	33.1	263	16.2	9	5.3	3.7	254	16.2	3	14.8	14.6	249		1130 hr.				
18.0	2	11.3	5.7	279	18.0	5	3.0	0.9	205		1730 hr.*				10.5	1	17.0	17.0	280	
	1130 hr.				21.0	2	8.0	3.5	164	10.5	22	34.3	32.0	268		1730 hr.				
10.5	1	63.0	63.0	235		1130 hr.				12.0	13	32.9	31.5	270	10.5	1	12.0	12.0	250	
	1730 hr.*				10.5	8	15.3	13.6	213	16.2	2	21.0	20.5	294		JODHPUR				
10.5	22	39.9	36.0	267	12.0	8	13.1	11.8	229		CALCUTTA/DUM DUM					0530 hr.*				
12.0	19	41.0	38.1	271	14.1	4	11.7	10.9	267	10.5	20	39.3	38.1	263	10.5	19	44.5	40.0	264	
14.1	7	42.5	40.4	260	16.2	3	7.5	7.3	244	12.0	20	40.8	39.2	257	12.0	14	46.6	44.3	259	
16.2	4	40.3	36.7	277	18.0	3	4.3	3.9	215	14.1	13	36.3	35.5	242	14.1	6	28.7	28.5	269	
18.0	1	34.0	34.0	270	21.0	3	6.7	4.2	051	16.2	3	29.2	29.0	263	16.2	2	29.5	29.0	247	
21.0	1	22.5	22.5	260		1730 hr.@					1730 hr.*				18.0	1	23.0	23.0	255	
24.0	1	19.5	19.5	275	10.5	19	12.9	10.5	223	10.5	24	40.8	39.2	262		1130 hr.				
	ALLAHABAD/ BAMHRAULI				12.0	18	12.6	9.9	228	12.0	22	37.9	36.1	259	10.5	1	35.5	35.5	275	
	0530 hr.*				14.1	14	8.4	1.7	255	14.1	9	35.8	35.3	252	10.5	19	39.0	38.2	261	
10.5	12	51.5	50.1	269	16.2	9	4.8	2.5	240	16.2	2	41.5	41.0	261	12.0	10	37.4	33.6	267	
12.0	3	54.0	53.2	261	18.0	7	5.4	1.0	027		DARJEELING				14.1	5	43.9	39.8	288	
	1130 hr.				21.0	1	6.0	6.0	185	10.5	1	50.0	50.0	255	16.2	2	30.0	28.4	312	
10.5	1	47.0	47.0	270	24.0	1	15.5	15.5	080		GADAG				18.0	1	9.0	9.0	180	
	1730 hr.*					BEGAMPET					0530 hr.					LUCKNOW/AMAUSI				
10.5	7	42.5	41.3	264		0530 hr.				10.5	5	20.5	18.7	242		1730 hr.				
	AMBALA				10.5	9	21.4	20.0	255	12.0	1	34.5	34.5	235	10.5	2	23.5	23.3	268	
	1730 hr.				12.0	4	18.0	17.2	264	14.1	1	21.0	21.0	270		MADRAS/ MINAMBAKKAM				
10.5	1	41.5	41.5	260	14.1	1	14.0	14.0	250	10.5	16	17.7	15.9	242	10.5	27	12.6	10.8	233	
	ANANTAPUR					1730 hr.				12.0	14	17.1	16.2	240	12.0	27	12.6	10.7	232	
	0530 hr.				10.5	4	22.7	22.2	243	14.1	6	15.7	12.2	283	14.1	26	11.6	9.1	260	
10.5	9	14.6	13.5	233		BHAGALPUR				16.2	1	26.0	26.0	265	16.2	18	7.0	4.8	265	
12.0	6	11.8	11.5	248		1630 hr.				18.0	1	21.0	21.0	260	18.0	8	8.7	5.6	232	
14.1	5	13.1	12.7	268	10.5	1	49.0	49.0	270	21.0	1	18.5	18.5	260	21.0	3	4.3	3.0	235	
16.2	4	9.4	8.2	260		BHUJ/ RUDRAMATA					GAUHATI				24.0	2	11.5	5.5	090	
18.0	3	6.2	5.7	298		1730 hr.				10.5	13	54.2	52.7	270		1130 hr.				
21.0	3	15.2	7.2	337	10.5	6	47.9	45.2	262	12.0	5	66.0	65.1	269	10.5	3	11.8	10.2	218	
24.0	1	16.0	16.0	095	12.0	2	48.0	41.5	277		1130 hr.				12.0	2	4.7	4.7	286	
	1730 hr.				14.1	1	43.5	43.5	255	10.5	1	30.0	30.0	285	14.1	1	1.0	1.0	080	
10.5	14	16.0	14.0	240																
12.0	6	14.7	13.6	235																

RADIOSONDE DATA

February 1963 (Magha 12— Phalguna 9, 1884 Saka)

During the month, observations of upper air temperature, pressure and humidity were made at 14 stations in India as given in the list below. For a detailed description of the instruments used, a reference may be made to the I.M.D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of station	Type of instrument used	Date of starting	Hours of routine observations in G.M.T. during the month	Remarks
1	Ahmadabad	Fan type	20th July 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October 1944	00 and 12	
3	Bangalore	Fan type	10th March 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July 1955	00 and 12	
7	Jodhpur	Clock type	17th April 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June 1946	00 and 12	
9	Nagpur/Sonegaon	Fan type	1st October 1946	00 and 12	
10	New Delhi/Safdarjung	Clock type	3rd December 1943	00 and 12	
11	Port Blair	Fan type	4th December 1949	00 and 12	
12	Srinagar	Clock type	1st Aug. 1962	00 and 12	
13	Trivandrum	Fan type	1st July 1947	00 and 12	
14	Vishakhapatnam	Fan type	8th December 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 1200 Hours G. M. T.

February 1963 (Magha 12—Phalguna 9, 1884 Saka)

Standard Pressure Surface mb.	TRIVANDRIM Surf. Pr. (1001 mb)						VISHAKHAPATNAM (1008 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	28	064	302.6	304	297	294.4	28	041	299.1	301	293	292.1
1000	28	077	..	..	..	..	28	110	..	..	..	..
900	28	1007	295.3	297	293	289.1	28	1032	294.3	297	290	279.3
850	28	1503	291.9	294	290	285.8	28	1526	291.2	297	287	275.8
800	28	2052	289.0	293	285	280.7	28	2043	287.5	291	283	273.7
700	28	3147	283.3	287	280	272.1	28	3154	280.6	283	279	265.9
600	28	4414	276.7	280	274	265.0	28	4413	272.7	277	269	260.4
500	28	5873	268.5	273	264	..	28	5852	264.3	267	260	..
400	28	7596	257.7	262	253	..	28	7549	254.2	257	248	..
300	27	9709	242.8	249	237	..	26	9634	240.0	246	233	..
250	27	10982	233.1	239	227	..	26	10895	231.4	239	220	..
200	24	12479	221.6	228	213	..	25	12381	220.9	228	211	..
175	20	13315	215.3	220	206	..	24	13281	214.6	222	209	..
150	20	14298	208.8	214	198	..	23	14205	209.3	216	203	..
125	17	15391	202.9	208	195	..	19	15277	203.4	207	199	..
100	17	16719	196.9	202	189	..	16	16611	198.7	202	195	..
80	14	18013	197.9	205	193	..	10	17938	197.1	200	195	..
70	12	18682	197.9	207	191	..	10	18701	198.5	205	192	..
60	10	19673	199.5	209	192	..	9	19609	201.9	213	192	..
50	8	20730	201.3	211	195	..	8	20677	204.1	213	193	..
40	5	22048	203.4	207	199	..						
30												
20												
10												

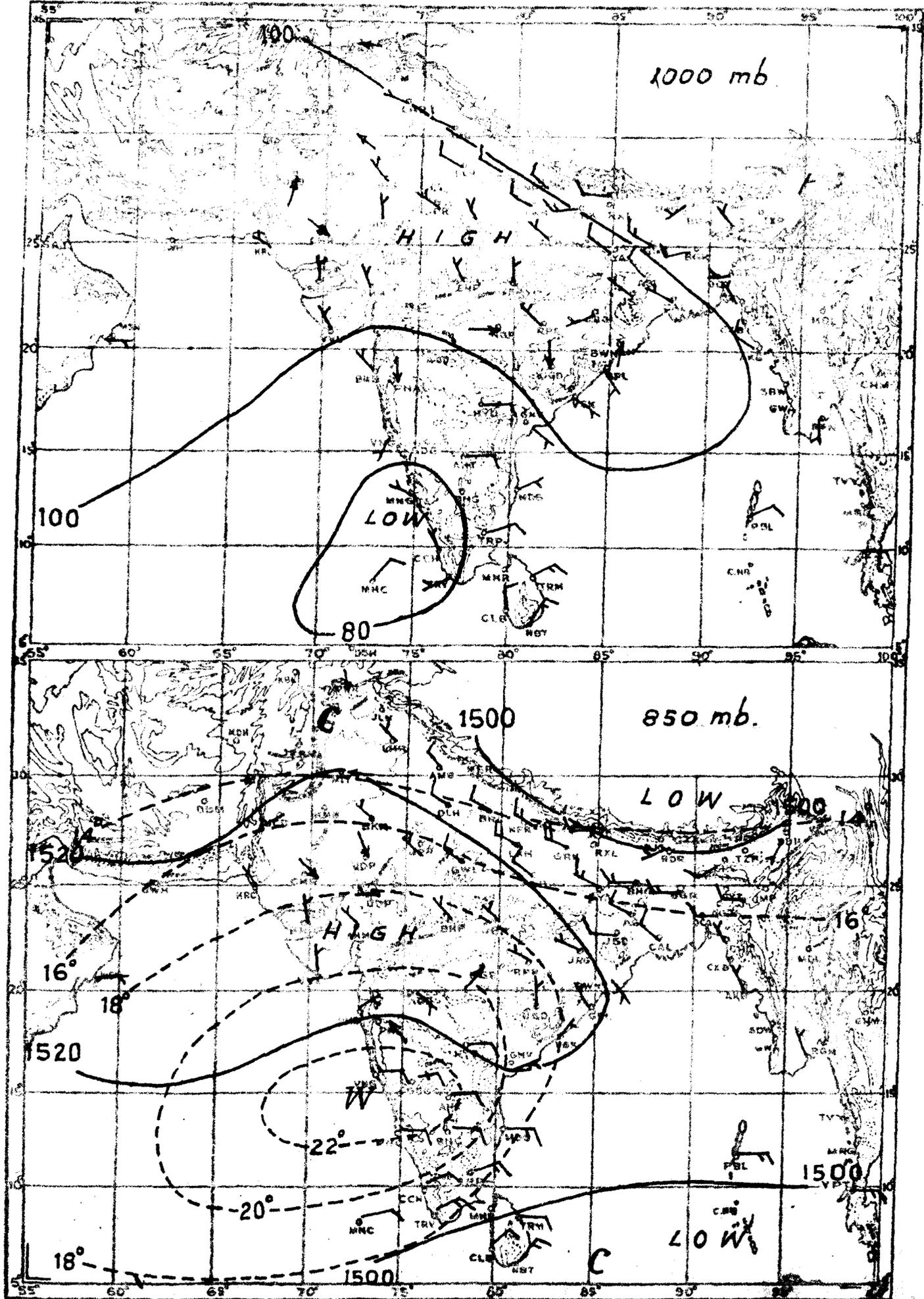
NOTE: Number of observation refer to those of dynamic height.
Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273°A.
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

FEBRUARY 1963

L.Mel.D.

1057c



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

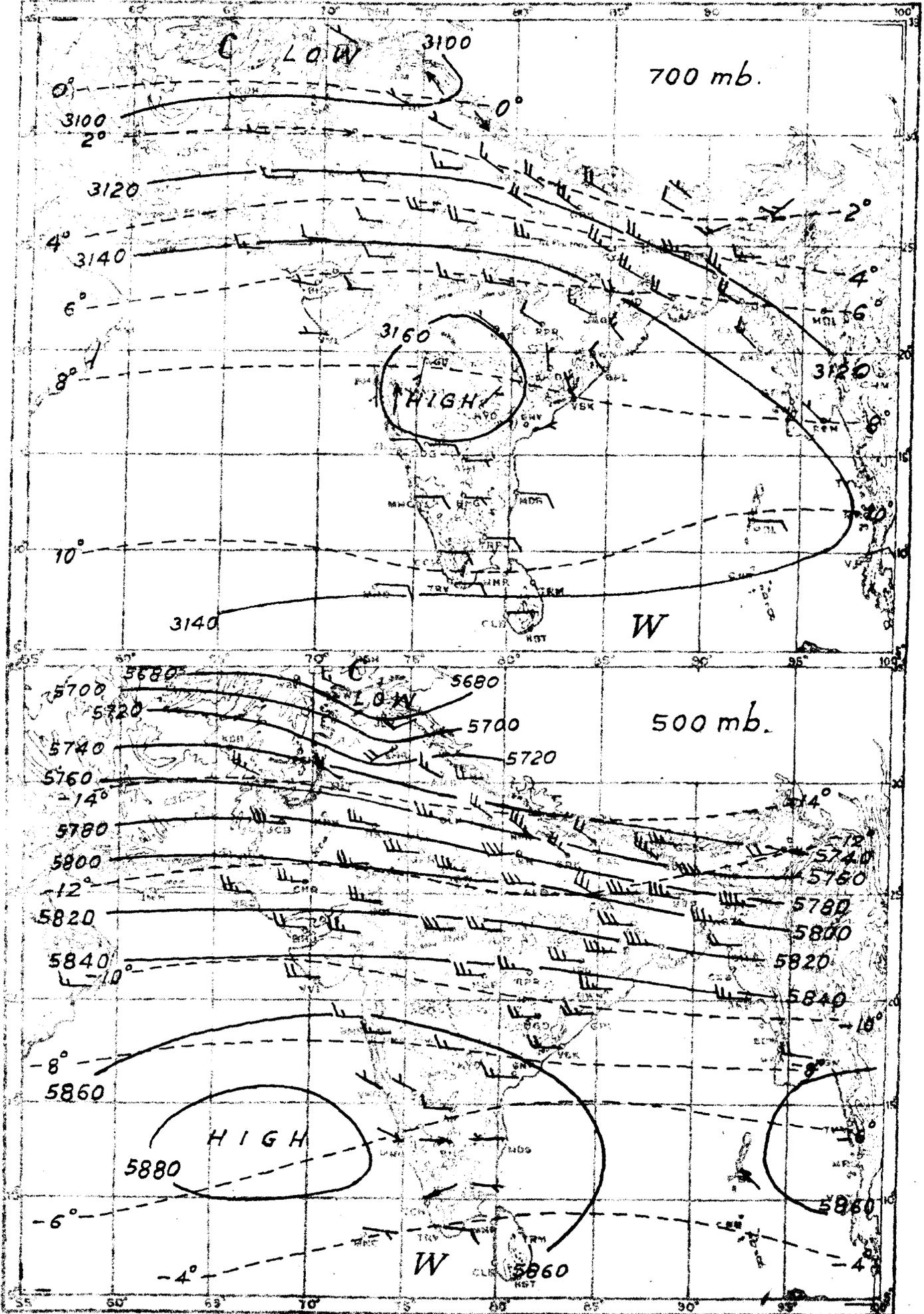
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

1. Met D

FEBRUARY 1963

Plate



RESULTANT WIND ——— 5 Knots, ——— 10 Knots, ——— 50 Knots.

----- Isotherms in degrees centigrade ——— Contours in geopotential metres.

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INDIA WEATHER REVIEW, 1963

Monthly Weather Report

MARCH

Published by authority of the Government of India

Chief features—

- (i) Movement of five western disturbances across north India;
- (ii) Good precipitation in northwest India; and
- (iii) A spell of heavy showers in south Peninsula during the last week.

Five western disturbances moved across north India during the month and all of them were active except for the fourth disturbance. The second disturbance which was the most active one intensified into a depression on 8th when it was over northwest Rajasthan and adjoining Punjab (P), the maximum pressure departure from normal being of the order of minus 16 mbs on 9th morning. In addition to the very heavy precipitation over most parts of northwest India and Uttar Pradesh, it caused strong dust-raising winds occasionally reaching gale force over Rajasthan and neighbouring areas on 8th and 9th. It also induced a low over Madhya Pradesh on the 5th which moved away eastwards across Assam by the 8th causing good precipitation in the remaining parts of north India and in the central parts of the country. The details of the movements and activity of the various western disturbances are given in the statement:—

Statement showing the movement and activity of western disturbances during the month of March 1963

S. No.	Period	Course	Region affected	Nature of precipitation	Period	Remarks
1	2	3	4	5	6	7
1.	2nd-6th	West Pakistan-Western Himalayas	West Rajasthan Punjab(I) Himachal Pradesh Jammu and Kashmir West Uttar Pradesh East Uttar Pradesh	Scattered rain Scattered rain Fairly widespread rain or snow Local or fairly wide-spread rain or snow Scattered or fairly wide-spread rain or snow Scattered rain	4th 4th, 5th, 6th 4th, 5th 4th, 5th, 6th 4th, 5th, 6th 6th	Fairly active disturbance with slow movement. Banihal recorded 8 cm of rain on 5th. An induced low formed over Madhya Pradesh on 5th and moved away eastwards across Assam by 8th.
2.	6th-10th	Afghanistan-Northwest Rajasthan and Punjab(P)-Western Himalayas	West Rajasthan Punjab(I) Himachal Pradesh Jammu and Kashmir West Uttar Pradesh East Uttar Pradesh Bihar plains	Scattered rain Scattered/fairly wide-spread rain or snow Local/fairly widespread rain or snow Do. Do. Scattered rain Local/scattered rain	9th to 11th 7th to 11th 8th to 11th 7th to 11th 8th to 11th 9th to 12th 10th to 12th	Active and intensified into a depression on 8th over northwest Rajasthan and Punjab(P). Induced a low over north Madhya Pradesh and southeast Uttar Pradesh on 10th and moved away eastwards, across Assam by 13th. Banihal 10 cm on 9th, Mynsari 12 cm and Mandi 10 cm on 10th.
3.	12th-19th	Afghanistan and Baluchistan-Sind-Hills of west Uttar Pradesh-Assam	West Rajasthan Punjab(I) Himachal Pradesh Jammu and Kashmir West Uttar Pradesh Bihar Plains Sub-Himalayan West Bengal Assam	Scattered rain Local/scattered rain Local rain Fairly widespread/local rain or snow Scattered rain or snow Scattered rain Scattered rain Scattered rain	15th, 16th 15th, 16th, 17th 17th 15th, 16th, 17th 15th, 16th, 17th 18th 18th 18th 18th, 19th, 20th	Active disturbance. Banihal 6 cm of rain and Garbyang, Dalhousie and Srinagar 5 cm each on 16th.
4.	16th-17th	Northern divisions of West Pakistan-Western Himalayas				Disturbance moved as an upper air trough.
5.	21st-27th	Baluchistan-East Uttar Pradesh-Assam	Jammu and Kashmir Jammu and Kashmir Punjab(I) Himachal Pradesh West Uttar Pradesh East Uttar Pradesh Bihar Plains Bihar Plateau Sub-Himalayan West Bengal Assam	Fairly widespread rain or snow Local/scattered rain or snow Local/scattered rain Fairly widespread/Local rain Local/scattered rain or snow Scattered rain Scattered rain Local/scattered rain Scattered rain Scattered rain	22nd, 23rd, 24th 25th, 26th 22nd to 25th 24th, 25th 23rd to 26th 25th 25th 25th, 26th 26th 25th, 26th, 27th	Active. Banihal 8 cm of rain on 24th.

An upper air trough which developed over Madhya Pradesh towards the end of February moved away eastward across Assam by 2nd March. In association with it a few light thundershowers occurred in northeast India on the first two days. Under the influence of the active western disturbances which moved across Eastern Himalayas there were spells of thundershowers in Assam. The thunderstorm activity was most pronounced during the second week. Cherrapunji recorded 5cm of rain and Goalpara, Cooch Behar, Jalpaiguri, Tehri, Shillong and Rangiya 4cm each on 11th and Mohanbari and Aijal 4cm each 12th.

Moist easterlies prevailed in the south Peninsula where thundershowers occurred till 4th. Coonoor recorded 6 cm of rain on 1st and 4th and Fort Cochin 7 cm on 3rd. Mainly dry weather prevailed thereafter till 14th over the entire Peninsula and in the central parts of the country. However with the movement of two feeble troughs in the easterlies across the south Peninsula, a few light showers occurred in Kerala during the third week. A few thunderstorms also occurred in east Madhya Pradesh and adjoining areas on 17th and 18th.

A feeble low pressure area which appeared over south Andaman sea on 20th moved slowly westwards and lay over the extreme south Peninsula and adjoining Sea areas on 24th. It persisted there till 26th and weakened. Moving into the Laccadive-Maldiva areas, it developed into a well marked trough in the east Arabian sea off the west coast. In association with these developments, there was pronounced influx of moist air into the Peninsula and central parts of the country, leading to a spell of good thundershowers over these areas with a few heavy showers during the last week. Some of the noteworthy amounts of rainfall recorded were : Cuddalore 8 cm. Pamban and Kallakurichi 6cm each and Tuticorin 5 cm on 25th, Palghat 7 cm and Nagapattinam and Kodaikanal 5 cm each on 26th, Bidar 5 cm and Chandbali and Raichur 4 cm each on 28th and Mahabaleshwar 3 cm on 30th.

Day temperatures were above normal in northwest India during the first week and again from 19th to 21st. They remained generally below normal during the remaining days being appreciably to markedly so on a few days. They were above normal during the first week and also on 23rd and 24th over northeast India and Uttar Pradesh. In the wake of the western depression mentioned earlier, day temperatures fell considerably and remained below normal in north India and north Peninsula during the second week with appreciable below normal temperatures in Uttar Pradesh and central parts of the country on some days. As a consequence of the general thundershower activity in the Peninsula and central parts of the country, day temperatures were again below normal over these areas during the last week. They were as much as 8-10 °C below normal at few places in north Interior Mysore on 28th.

The total rainfall for the month was in large excess in the Punjab(I), west Rajasthan, Madhya Maharashtra and States of Madras and Mysore, in moderate excess in Kerala and in slight excess in east Uttar Pradesh and Marathwada. It was normal in Sub-Himalayan West Bengal, Bihar Plains, east Rajasthan and Vidarbha, in slight defect in Bihar Plateau, west Uttar Pradesh and Jammu and Kashmir, and in moderate defect in Assam, Orissa, and east Madhya Pradesh. It was in large defect in the Bay Islands, Gangetic West Bengal, west Madhya Pradesh, Andhra Pradesh and the Arabian Sea Islands. There was no rain in Gujarat State and the Konkan.

Mean maximum temperature was above normal in the Konkan and the Arabian Sea Islands and below normal in Jammu and Kashmir and Rayalaseema. It was normal over the rest of the country outside Himachal Pradesh. Mean minimum temperature was above normal in the Bay Islands and normal over the rest of the country outside Himachal Pradesh.

Mean relative humidity in the morning was above normal in the Punjab(I), Rayalaseema, north Interior Mysore and the Arabian Sea Islands and below normal in Assam. It was normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was above normal in the Bay Islands, Bihar State, west Madhya Pradesh, Marathwada, Telangana, Rayalaseema, the States of Madras, Mysore and Kerala and the Arabian Sea Islands and below normal in Vidarbha. It was normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and Sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I. S. T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I. S. T. of the date given in the succeeding column.

1	Rainfall (millimetres)	3	4	5	Relative humidity %		Cloud		1	2	3	4	5	Relative humidity %		Cloud	
	2				Mean maximum temperature °C	Mean minimum temperature °C	0830 hrs. I.S.T.	1730 hrs. I.S.T.						0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.
Division									Division—contd.								
1. Assam (Including Manipur, & Tripura).	47.5 -33.0	59	29.9 +1.0	15.4 0	63 -8	47	2.5 -0.6	2.8	8. Rajasthan	9.4 +3.0	147	32.2 +0.3	16.2 +0.2	44 0	27	1.6 0	1.6
2. West Bengal	13.2 -16.6	44	32.7 -0.1	19.3 0	59 -3	41	2.1 -0.1	1.8	9. Madhya Pradesh	8.2 -5.1	62	33.3 -0.2	16.7 -0.2	42 +1	23	1.8 +0.3	2.1
3. Orissa	14.9 -9.3	62	33.0 -0.7	21.1 +0.1	64 -2	50	2.0 0	2.1	10. Gujarat State	0 -1.4	0	34.5 +0.4	19.6 +0.8	59 -2	33	1.0 -0.2	0.7
4. Bihar	14.0 -1.0	93	32.3 -0.3	16.9 -0.3	51 +3	34	1.8 +0.3	2.2	11. Maharashtra State	10.4 +4.5	176	34.6 -0.1	20.3 +0.4	49 0	31	1.8 +0.2	2.3
5. Uttar Pradesh	12.5 -0.1	99	31.5 -0.1	15.2 +0.2	54 +3	30	1.5 0	1.8	12. Andhra Pradesh	3.5 -5.1	41	34.9 -0.7	22.5 0	68 +3	45	2.5 +0.5	1.9
6. Punjab (India) (Including Himachal Pradesh & Delhi).*	46.7 +21.4	185	28.0 -0.8	13.1 -0.4	63 +7	39	2.4 0	2.8	13. Madras State	50.1 +34.2	315	32.7 -0.9	23.1 +0.1	76 +2	55	4.1 +1.5	3.8
7. Jammu and Kashmir	113.8 -30.6	79	7.7 -2.6	-6.4 +0.3	64 0	50	5.4 +0.5	5.4	14. Mysore	20.1 +11.6	236	33.8 -0.5	21.0 +0.3	65 +4	38	2.5 +1.0	3.7
									15. Kerala	73.7 +15.2	126	32.1 +0.1	24.6 -0.3	78 +2	70	3.8 +1.1	4.2
Sub-division									Sub-division—contd.								
1. Bay Islands	12.7 -15.8	45	31.3 +0.5	23.6 +1.7	72 0	77	4.4 +1.5	3.9	15. Madhya Pradesh (West).	3.7 -4.6	45	33.4 -0.2	16.3 -0.3	38 +1	21	1.7 +0.4	2.1
2. Assam (Including Manipur, Tripura).	47.5 -33.0	59	29.9 +1.0	15.4 0	63 -8	47	2.5 -0.6	2.8	16. Madhya Pradesh (East).	13.8 -5.8	70	33.2 -0.3	17.2 0	47 0	25	1.9 +0.3	2.2
3. Sub-Himalayan West Bengal.	34.0 +2.4	108	29.7 -1.0	15.7 -0.1	58 -1	41	1.8 +0.1	2.3	17. Gujarat Region	0 -1.1	0	36.4 +0.2	19.6 +1.0	49 -3	18	0.9 -0.2	0.7
4. Gangetic, West Bengal.	5.6 -23.5	19	33.6 +0.1	20.4 +0.1	59 -4	41	2.1 -0.1	1.6	18. Saurashtra and Kutch.	0 -1.5	0	33.3 +0.5	19.6 +0.6	64 -1	42	1.1 -0.2	0.6
5. Orissa	14.9 -9.3	62	33.0 -0.7	21.1 +0.1	64 -2	50	2.0 0	2.1	19. Konkan	0 -0.6	0	31.7 +1.2	22.7 +1.0	69 -2	64	1.6 0	1.0
6. Bihar Plateau	17.9 -4.5	80	32.7 -0.1	17.1 -0.4	49 +2	29	1.8 +0.3	2.6	20. Madhya Maharashtra	16.7 +13.1	464	36.0 -0.3	18.7 +0.6	44 +2	23	1.7 +0.7	2.8
7. Bihar Plains	11.6 +1.1	110	31.9 -0.5	16.6 -0.1	53 +3	39	1.8 +0.3	1.9	21. Marathwada	7.0 +0.9	115	35.7 -0.5	19.7 -0.1	33 -3	18	2.3 +1.1	2.9
8. Uttar Pradesh (East).	12.4 +1.6	115	32.2 -0.2	15.7 0	54 +4	31	1.5 +0.1	1.7	22. Vidarbha	13.8 -0.2	99	35.4 -0.8	20.1 -0.3	40 -1	20	2.0 -0.5	2.4
9. Uttar Pradesh (West).	12.5 -2.7	82	30.5 +0.1	14.7 +0.3	54 +3	29	1.5 -0.3	2.0	23. Coastal Andhra Pradesh.	4.5 -4.7	49	33.8 -0.5	22.8 0	75 +1	60	2.6 +0.2	1.7
10. Punjab (India) (Including Delhi).	46.7 +21.4	185	28.0 -0.8	13.1 -0.4	63 +7	39	2.4 0	2.8	24. Telangana	3.8 -6.8	36	35.7 -0.7	21.9 +0.2	65 +4	27	3.1 +1.1	1.9
11. Himachal Pradesh	187.8 ..	..	25.0 ..	11.9 ..	83 ..	48	2.5 ..	2.9	25. Rayalaseema	0.8 -3.8	17	36.3 -1.4	22.4 -0.1	57 +6	32	1.4 +0.3	2.6
12. Jammu and Kashmir	113.8 -30.6	79	7.7 -2.6	-6.4 +0.3	64 0	59	5.4 +0.5	5.4	26. Madras State	50.1 +34.2	315	32.7 -0.9	23.1 +0.1	76 +2	55	4.1 +1.5	3.8
13. Rajasthan (West)	14.4 +6.4	180	31.9 +0.3	15.8 +0.1	49 -3	30	1.7 -0.1	1.7	27. Coastal Mysore	18.3 +16.3	915	32.5 +0.8	23.2 -0.1	75 -2	67	3.3 +1.1	3.3
14. Rajasthan (East)	4.5 -0.5	90	32.5 +0.4	16.5 +0.4	40 +2	24	1.4 0	1.5	28. Interior Mysore (North).	28.4 +20.9	379	35.1 -0.9	21.3 +0.3	55 +7	32	1.7 +0.7	3.3
									29. Interior Mysore (South).	13.7 +1.7	114	33.3 -0.8	19.8 +0.5	68 +4	30	2.9 +1.3	4.3
									30. Kerala	73.7 +15.2	126	32.1 +0.1	24.6 -0.3	78 +2	70	3.8 +1.1	4.2
									31. Arabian Sea Islands.	6.5 -15.8	29	31.3 +1.1	24.2 -0.7	79 +7	72	3.9 +1.1	4.5

Note.—The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh not included.

MONTHLY MEANS OF UPPER WINDS

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 40 stations all the observations, were taken by means of pilot balloons and at 14 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk(*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n = represents the number of observations;

V = represents the mean wind speed in metres per second; irrespective of direction;

v = represents the resultant mean velocity in metres per second;

D = represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a.m.s.l. Of these the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N. Long. E.				Height of anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
		°	'	°	'						
1	Agartala	23	53	91	15	17	28th November 1951	0530		1730	2330
2	Ahmadabad	23	04	72	38	61	19th May 1928	0530*	1130	1730*	2330
3	Allahabad/Bamhrauli	25	27	81	44	103	28th February 1930	0530*	1130	1730*	2330
4	Ambala	30	23	76	46	279	1st April 1941	0530	1130	1730	2330
5	Anantapur	14	41	77	37	365	12th February 1946	0530		1730	2330
6	Asansol	23	41	86	59	135	29th May 1942	0530		1730	2330
7	Aurangabad/Chikalthan	19	51	75	24	583	7th October 1951	0530		1730	2330
8	Bahraich	27	34	81	36	134	1st October 1961	0530		1730	
9	Bangalore	12	58	77	35	936	19th May 1915	0530@	1130	1730@	2330
10	Bareilly	28	22	79	24	181	12th January 1943	0530		1730	
11	Begampet	17	27	78	28	543	1st September 1929	0530		1730	2330
12	Bhagalpur	25	14	86	57	61	19th May 1950	0530		1730	
13	Bhopal/Bairagarh	23	17	77	21	532	26th February 1943	0530		1730	2330
14	Bhubaneswar	20	15	85	50	54	5th December 1942	0530		1730	2330
15	Bhuj/Rudramata	23	15	69	48	90	14th September 1937	0530		1730	2330
16	Bikaner	28	00	73	18	229	18th October 1946	0530		1730	2330
17	Bombay/Santa Cruz	19	07	72	51	27	14th May 1933	0530*	1130	1730*	2330
18	Calcutta/Dum Dum	22	39	88	27	13	14th May 1921	0530*	1130	1730*	2330
19	Cochin/Willingdon †	09	56	76	14	13	16th March 1942	0530		1730	2330
20	Darjeeling	27	03	88	16	2115	21st May 1956	0530		1730	
21	Dehra Dun	30	19	76	03	692	1st October 1958	0530		1730	
22	Dibrugarh/Mohanbari	27	29	95	01	112	1st June 1948	0530	1130	1730	2330
23	Gadag	15	25	75	38	650	3rd May 1943	0530		1730	2330
24	Gauhati	26	05	91	43	55	12th March 1955	0530*	1130	1730*	2330
25	Gaya	24	45	84	57	119	19th March 1937	0530		1730	2330
26	Gopalpur	19	16	84	53	24	15th February 1946	0530		1730	2330
27	Gorakhpur	26	45	83	22	83	5th January 1943	0530		1730	
28	Gwalior	26	14	78	15	208	7th May 1938	0530	1130	1730	2330
29	Imphal/Tulihal	24	46	92	54	782	8th March 1952	0530	1130	1730	2330
30	Jabalpur	23	10	79	57	402	30th July 1928	0530		1730	2330
31	Jagdalpur	19	05	82	02	562	25th March 1948	0530		1730	2330
32	Jaipur/Sanganer	26	49	75	48	403	6th June 1953	0530		1730	2330
33	Jamshedpur	22	49	86	11	144	23rd July 1942	0530		1730	
34	Jhansuguda	21	55	84	05	240	1st May 1944	0530		1730	2330
35	Jodhpur	26	18	73	01	229	15th October 1934	0530*	1130	1730*	2330
36	Lucknow/Amausi	26	45	80	53	133	20th November 1950	0530		1730	2330
37	Madras/Minambakkam	13	00	80	11	29	8th April 1926	0530*	1130	1730*	2330
38	Mangalore/Bajpe	12	55	74	53	104	25th May 1959	0530		1730	2330
39	Minicoy	08	18	73	00	15	14th April 1941	0530		1730	2330
40	Nagpur/Sonegaon	21	06	79	03	316	23rd April 1943	0530*	1130	1730*	2330
41	New Delhi/Safdarjung	28	35	77	12	227	20th October 1936	0530*	1130	1730*	2330
42	Poona	18	32	73	51	593	5th January 1925	0530		1730	2330
43	Port Blair	11	40	92	43	95	29th October 1945	0530*	1130	1730*	2330
44	Raipur	21	14	81	39	308	15th July 1944	0530		1730	2330
45	Raxaul	26	59	84	51	83	28th October 1957	0530		1730	
46	Siliguri/Baghdogra	26	38	88	19	140	7th June 1953	0530		1730	2330
47	Srinagar	34	06	74	48	1603	1st August 1962	0530		1730	
48	Tiruchhirappalli	10	46	78	43	96	22nd June 1936	0530*	1130	1730*	2330
49	Trivandrum	08	29	76	57	73	8th December 1928	0530		1730	2330
50	Udaipur	24	35	73	42	587	24th June 1947	0530		1730	2330
51	Vengurla	15	52	73	38	8	22nd November 1941	0530		1730	2330
52	Veraval	20	54	70	22	17	13th October 1941	0530		1730	2330
53	Vijaywada/Gannavaram	16	32	80	48	32	8th April 1942	0530		1730	2330
54	Vishakhapatnam	17	43	83	14	10	24th September 1928	0530*	1130	1730*	2330

* Radio wind ascents.
 @ Radiosonde ascents followed by optical theodolite.
 Meteorological Office

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

March, 1963 (Phalguna 10, 1884—Chaitra 10, 1885 Saka)

Station	AMBALA																ANANTAPUR							
	0530				1130				1730				2330				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.9	0.5	359	31	3.0	0.4	106	31	3.0	1.0	304	31	1.9	0.8	349	31	1.0	0.6	131	31	2.9	2.6	075
0.15 a.g.	31	8.6	4.9	354	31	6.2	1.2	035	31	7.4	2.7	293	30	9.0	4.9	342	31	4.9	3.0	166	31	5.3	5.0	075
0.3 a.m.s.l.	31	3.6	2.0	358	31	4.0	0.7	057	31	4.4	1.6	290	30	3.7	1.8	336								
0.6 "	31	8.8	4.8	344	31	7.4	1.9	051	31	8.1	2.6	295	30	9.6	5.0	338	31	5.2	3.2	169	30	4.7	4.1	075
0.9 "	31	8.4	4.3	332	31	7.9	1.2	048	31	9.0	2.4	304	30	10.1	4.7	331	31	6.6	4.2	156	30	4.4	3.8	082
1.5 "	31	7.8	3.3	306	29	8.1	0.7	265	30	8.6	3.0	307	30	7.8	2.8	309	31	6.3	4.1	117	31	5.0	4.2	080
2.1 "	30	7.7	3.1	300	28	7.7	3.2	273	28	7.8	3.3	317	27	6.9	4.2	285	30	4.5	3.5	080	31	5.1	4.2	087
3.0 "	25	8.7	3.7	260	23	9.2	6.0	295	25	7.4	5.7	305	25	8.3	4.6	281	29	5.4	4.6	035	25	5.0	2.7	074
3.6 "	1	11.5	11.5	320	19	9.7	7.5	295	22	7.2	4.8	294	3	8.2	5.7	256	29	5.0	3.7	042	23	5.0	3.3	065
4.5 "					19	10.0	7.7	291	19	9.3	6.5	292					26	6.0	2.6	026	22	5.2	1.4	027
5.4 "					14	12.4	9.7	288	18	11.8	9.1	295					19	6.4	3.2	321	17	7.1	2.6	347
6.0 "					11	14.8	13.6	293	14	14.0	11.7	288					18	7.1	4.1	302	15	7.4	4.2	334
7.2 "					3	15.7	15.3	287	2	10.5	10.4	292					10	9.9	7.3	290	12	7.8	5.4	335
9.0 "																	4	14.6	12.4	269	5	9.1	8.8	328

Station	ANANTAPUR				ASANSOL																AURANGABAD/ CHIKALTHAN							
	2330				0530				1130				1730				2330				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.4	4.1	100	31	0.4	0.1	310	9	2.1	1.3	299	31	1.6	1.0	305	31	1.0	0.3	261	31	1.8	0.5	310				
0.15 a.g.	31	8.8	8.4	106	31	4.5	1.2	306	9	3.3	2.3	287	31	4.3	2.5	298	31	7.1	3.1	337	31	6.1	2.0	006				
0.3 a.m.s.l.					31	5.0	0.8	310	9	3.2	2.2	291	31	4.9	2.8	298	31	7.3	3.4	335								
0.6 "	31	9.2	8.8	106	31	5.8	2.1	305	9	4.6	3.8	302	31	5.3	3.6	301	31	7.2	3.6	316								
0.9 "	31	9.1	8.7	066	30	6.0	3.2	304	9	5.6	4.2	293	31	5.8	4.6	298	30	6.3	3.9	305	31	7.8	3.5	016				
1.5 "	31	4.6	4.0	103	30	7.1	5.4	284	9	6.7	5.5	279	31	5.5	4.7	285	30	7.1	5.9	282	31	6.5	2.0	350				
2.1 "	31	3.2	2.5	081	30	8.3	7.5	276	8	6.8	5.7	275	29	7.0	6.4	287	30	9.4	7.4	280	30	5.6	2.3	261				
3.0 "	29	4.3	1.7	007	27	12.7	11.7	284	3	8.2	5.1	292	28	9.4	9.4	290	25	11.1	9.0	295	24	5.6	2.8	240				
3.6 "	19	4.2	2.5	002	14	12.7	12.1	290					24	13.7	12.7	294	14	12.3	11.2	300	5	8.5	7.0	252				
4.5 "	11	5.4	3.1	025	7	12.1	11.8	285					18	16.3	15.7	298	5	9.0	8.6	273								
5.4 "	6	4.9	0.2	034	3	11.0	10.8	296					11	19.7	19.2	283												
6.0 "	2	3.3	2.0	186	1	11.5	11.5	305					10	20.3	19.7	286												
7.2 "					1	18.5	18.5	285					5	26.8	26.4	285												
9.0 "													1	59.0	59.0	315												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

March, 1963 (Phalguna 10, 1884—Chaitra 10, 1885 Saka)

Station	BEGAMPET								BHAGALPUR												BHOPAL/BAIRAGARH			
	1730				2330				0530				1130				1730				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	1.9	1.2	117	31	1.8	1.6	118	31	2.1	0.8	203	11	2.4	1.8	280	31	2.4	1.5	298	31	2.1	0.7	087
0.15 a.g.	31	3.5	2.6	111	31	7.2	6.7	125	29	5.5	2.7	215	11	4.1	2.1	293	31	5.6	3.6	311	31	7.3	2.6	085
0.3 a.m.s. l.									29	6.4	2.0	225	11	4.1	2.2	294	31	6.0	3.9	307				
0.6 "	31	3.3	2.4	112	31	5.3	5.0	120	29	6.3	1.9	286	11	3.5	1.8	282	30	6.0	4.6	294	31	6.3	2.6	092
0.9 "	31	3.2	2.4	112	31	7.8	7.2	130	29	6.1	3.0	293	11	4.6	3.4	284	30	6.5	5.2	285	31	7.4	1.8	044
1.5 "	31	3.3	2.3	118	31	5.7	3.9	123	29	6.8	5.7	295	11	6.8	6.3	273	28	6.6	6.3	270	30	6.4	2.0	307
2.1 "	31	2.8	1.0	108	30	4.5	1.0	015	29	8.5	7.8	288	10	8.1	7.9	277	28	8.6	7.9	274	30	7.2	4.9	268
3.0 "	31	3.7	1.7	050	30	5.2	3.3	325	28	11.6	10.5	283	3	11.3	11.1	249	23	12.2	11.1	287	27	10.1	8.2	259
3.6 "	31	4.1	1.8	287	22	5.7	4.2	322	22	13.6	12.8	285					23	14.3	13.4	288	23	10.9	9.6	275
4.5 "	26	6.6	4.8	306	6	7.3	6.4	306	9	12.7	12.7	296					19	15.8	15.3	288	18	12.7	11.1	279
5.4 "	22	9.2	7.1	292	1	13.5	13.5	310	6	15.0	14.7	286					13	17.3	16.9	289	16	14.7	13.0	295
6.0 "	20	10.3	8.5	285	1	8.5	8.5	315	5	17.3	16.8	286					10	18.5	18.0	291	15	18.2	16.7	292
7.2 "	15	13.0	10.7	280					3	20.8	20.5	286					6	20.8	20.5	285	12	24.4	23.1	298
9.0 "	4	15.9	15.7	255																	2	39.7	39.3	317

Station	BHOPAL/BAIRAGARH								BHUBANESHWAR															
	1730				2330				0530				1130				1730				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	3.3	1.9	261	31	2.9	0.6	344	31	2.2	1.2	205	11	1.3	0.7	185	31	5.6	4.7	181	31	4.0	3.4	193
0.15 a.g.	31	5.7	3.8	264	30	9.1	3.2	337	27	5.6	3.0	212	11	2.7	1.4	190	31	7.0	5.8	180	31	8.0	7.8	204
0.3 a.m.s. l.									27	7.1	5.0	226	11	3.4	1.6	220	31	7.0	5.6	182	31	8.7	8.6	206
0.6 "	31	5.1	3.4	259	30	8.2	2.6	336	27	6.9	4.8	225	11	3.1	2.1	225	31	4.9	3.7	193	31	8.4	8.0	205
0.9 "	31	5.2	3.8	272	30	8.8	3.3	327	27	5.6	4.3	224	11	3.5	2.7	224	31	4.0	2.2	210	31	6.8	5.8	206
1.5 "	31	5.0	3.8	274	30	7.3	3.3	284	24	3.7	1.4	278	9	3.3	1.9	240	28	4.8	3.1	313	31	4.3	2.5	273
2.1 "	30	5.5	4.2	270	30	7.0	4.9	254	22	4.5	2.1	316	6	4.8	2.4	283	28	6.2	5.4	317	30	5.1	4.2	312
3.0 "	27	7.0	5.8	268	25	7.9	6.1	250	18	6.6	5.0	299	2	8.3	5.6	344	27	7.9	6.5	305	24	6.5	5.6	315
3.6 "	23	10.6	9.0	271	4	8.0	6.5	287	13	6.7	5.7	281					24	8.0	7.6	297	2	9.5	8.3	315
4.5 "	19	12.4	11.2	275					12	9.8	9.1	279					22	11.0	10.2	287				
5.4 "	17	14.8	13.5	285					11	10.4	10.0	281					21	13.1	12.4	281				
6.0 "	17	17.0	15.7	286					7	12.6	12.4	261					16	14.7	14.1	278				
7.2 "	10	21.6	20.4	282					1	15.0	15.0	250					14	16.5	15.7	280				
9.0 "	2	36.0	33.5	294													3	31.2	11.8	309				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

March, 1963 (Phalguna 10, 1884—Chaitra 10, 1885 Saka)

Station	BHUIJ/RUDRAMATA												BIKANER											
	0530				1730				2330				0530				1730				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.8	1.6	246	31	4.4	2.6	266	31	2.9	2.6	258	31	1.1	0.4	193	31	1.6	0.8	254	31	1.1	0.4	029
0.15 a.g. . .	31	6.4	4.4	273	31	5.1	3.0	269	31	7.1	5.1	271	31	8.2	1.8	132	31	4.9	2.6	255	31	8.0	3.1	082
0.3 a.m.s.l. .	31	7.6	4.9	287	31	5.5	3.3	270	31	7.9	5.7	275	31	6.8	2.7	135	31	4.0	2.1	252	31	6.5	3.7	054
0.6 „ . . .	31	8.7	5.4	291	31	5.7	3.6	273	31	8.4	5.4	277	31	7.7	1.8	210	31	5.4	3.1	248	31	7.5	2.2	052
0.9 „ . . .	31	8.1	4.5	286	31	5.8	3.9	275	30	7.5	4.4	277	30	6.8	3.1	246	30	4.8	3.0	241	30	6.0	0.2	243
1.5 „ . . .	31	8.1	4.4	273	31	6.9	4.7	273	30	7.3	3.8	268	29	7.2	5.3	260	29	5.4	3.5	249	29	5.1	4.4	232
2.1 „ . . .	30	8.9	5.5	271	29	7.4	4.6	273	29	8.6	4.4	269	27	8.5	5.5	280	27	5.8	4.2	258	28	7.9	6.4	243
3.0 „ . . .	26	8.9	5.3	275	29	10.6	7.8	274	26	9.5	4.8	277	25	10.1	7.3	300	25	7.8	6.0	259	25	9.6	7.3	265
3.6 „ . . .	14	8.5	6.2	279	30	11.3	8.7	274	18	10.3	6.2	279	7	9.5	7.4	318	24	9.7	7.9	271	12	8.3	7.6	290
4.5 „ . . .	10	10.7	8.6	296	28	13.8	12.0	280	8	9.3	7.0	291	1	4.5	4.5	270	24	13.0	12.4	273	2	9.7	7.1	289
5.4 „ . . .	4	9.3	9.0	299	26	16.7	15.1	278	6	12.5	9.9	306					18	15.4	14.5	278				
6.0 „ . . .	2	9.5	9.5	300	23	18.6	17.3	286	6	14.2	11.7	299					12	17.1	13.7	259				
7.2 „ . . .	1	18.5	18.5	315	18	25.3	23.4	287									5	19.8	19.3	282				
9.0 „ . . .					7	35.4	33.9	276																

Station	BOMBAY/SANTA CRUZ												CALCUTTA/DUM DUM											
	0530*				1130				1730*				2330				0530*			1130				
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.6	0.6	341	31	1.8	0.5	340	31	5.3	4.9	310	31	1.2	0.7	335	31	0.5	0.3	238	31	1.5	0.5	231
0.15 a.g. . .	31	5.6	3.9	001	30	3.6	1.5	352	31	7.2	6.4	319	31	5.6	4.8	338	31	4.4	2.4	256	31	3.6	1.6	268
0.3 a.m.s.l. .	31	5.1	3.6	006	30	3.4	1.8	026	31	6.3	5.5	322	31	6.0	5.2	335	31	4.5	2.5	258	31	3.3	1.5	270
0.6 „ . . .	31	5.0	3.5	010	31	4.3	2.5	037	31	4.5	3.6	322	31	6.0	5.0	332	31	5.0	2.5	262	31	4.0	2.1	270
0.9 „ . . .	31	5.6	3.7	011	31	5.3	2.5	038	31	3.7	2.5	332	31	5.0	3.8	326	31	5.4	2.7	263	31	4.7	2.8	271
1.5 „ . . .	31	5.5	2.8	008	31	4.6	1.0	299	31	3.7	1.4	287	31	4.3	2.4	312	31	5.1	3.3	278	31	6.2	4.3	270
2.1 „ . . .	31	5.1	1.8	296	30	5.1	2.5	127	31	5.0	2.9	266	31	4.7	2.0	268	31	7.2	5.7	283	29	7.3	6.1	279
3.0 „ . . .	31	6.4	4.4	226	30	5.7	4.3	214	31	5.5	3.0	237	31	6.0	2.5	192	31	9.7	8.6	289	23	9.5	7.8	290
3.6 „ . . .	31	7.0	4.0	233	30	6.5	3.9	244	31	6.2	2.5	254	29	5.9	2.6	212	31	10.8	9.6	288	18	12.2	10.4	294
4.5 „ . . .	31	8.3	4.8	271	30	8.6	5.7	283	31	7.2	4.5	294	22	7.3	4.5	297	31	13.3	12.2	279	15	13.0	12.2	294
5.4 „ . . .	31	10.4	7.0	295	30	11.1	9.2	283	31	10.0	8.5	299	13	8.4	6.7	285	31	15.5	14.8	281	9	26.4	14.9	286
6.0 „ . . .	31	11.8	8.6	295	30	13.6	11.1	288	31	11.9	9.4	294	12	9.6	7.2	286	31	17.1	16.0	278	7	16.6	15.1	286
7.2 „ . . .	31	17.1	13.0	296	28	17.2	15.0	288	31	15.3	12.2	294	2	14.3	14.3	255	31	21.4	20.1	272	1	18.0	18.0	255
9.0 „ . . .	31	22.4	19.0	300	23	19.9	18.3	277	31	19.1	16.4	290					31	29.2	28.2	271				

RADIOSONDE DATA

March, 1963 (Phalguna 10, 1884—Chaitra 10, 1885 Saka)

During the month, observations of upper air temperature, pressure and humidity were made at 14 stations in India as given in the list below. For a detailed description of the instruments used, a reference may be made to the I.M.D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in G.M.T. during the month	Remarks
1	Ahmadabad	Fan type	20th July 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13th December, 1946 to 30th November, 1947.
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
10	New Delhi/Safdarjung	Clock type	3rd December, 1943	00 and 12	
11	Port Blair	Fan type	4th December, 1949	00 and 12	
12	Srinagar	Clock type	1st August, 1962	00 and 12	
13	Trivandrum	Fan type	1st July, 1947	00 and 12	
14	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI-- MEAN DYNAMIC HEIGHT TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES
From Ascents At 12 Hours GMT.

March 1963 (Phalguna 10, 1884--Chaitra 10, 1885 Saka)

Standard Pressure Surface mb.	TRIVANDRUM Surf. Pr. (1001 mb.)						VISHAKHAPATNAM (1005 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A.				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	31	064	302.7	304	297	295.9	31	041	301.5	303	301	296.1
1000	31	070	..	..	..	..	31	087	..	..	..	..
900	31	1001	295.4	298	293	290.4	31	1016	296.6	300	292	282.8
850	31	1497	292.5	295	289	287.6	31	1513	294.4	299	291	279.7
800	31	2016	289.3	293	285	283.3	31	2035	290.3	293	283	276.2
700	31	3143	283.4	287	280	275.0	31	3157	282.5	287	278	270.3
600	31	4411	276.6	281	273	267.4	31	4422	272.0	279	268	260.0
500	31	5870	268.5	273	261	..	30	5860	266.4	271	261	..
400	31	7594	257.9	262	254	..	30	7582	256.2	263	252	..
300	27	9709	242.9	247	237	..	27	9689	243.0	248	238	..
250	26	10984	233.0	239	226	..	26	10959	233.4	239	225	..
200	24	12470	221.3	227	212	..	23	12458	222.3	228	215	..
175	21	13331	215.0	219	209	..	21	13296	216.3	222	212	..
150	20	14285	207.1	213	199	..	21	14282	210.5	217	205	..
125	20	15362	202.0	207	195	..	19	15344	204.0	211	192	..
100	18	16693	197.1	202	190	..	18	16690	199.0	207	192	..
80	11	17954	198.6	207	192	..	15	18001	197.5	203	191	..
70	9	18742	201.9	207	193	..	14	18775	199.9	208	194	..
60	6	19730	205.3	211	199	..	11	19763	203.3	215	196	..
50							11	20783	208.0	217	199	..
40												
30												
20												
10												

NOTE.—Number of observation refer to those of dynamic height.

Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273) °A.

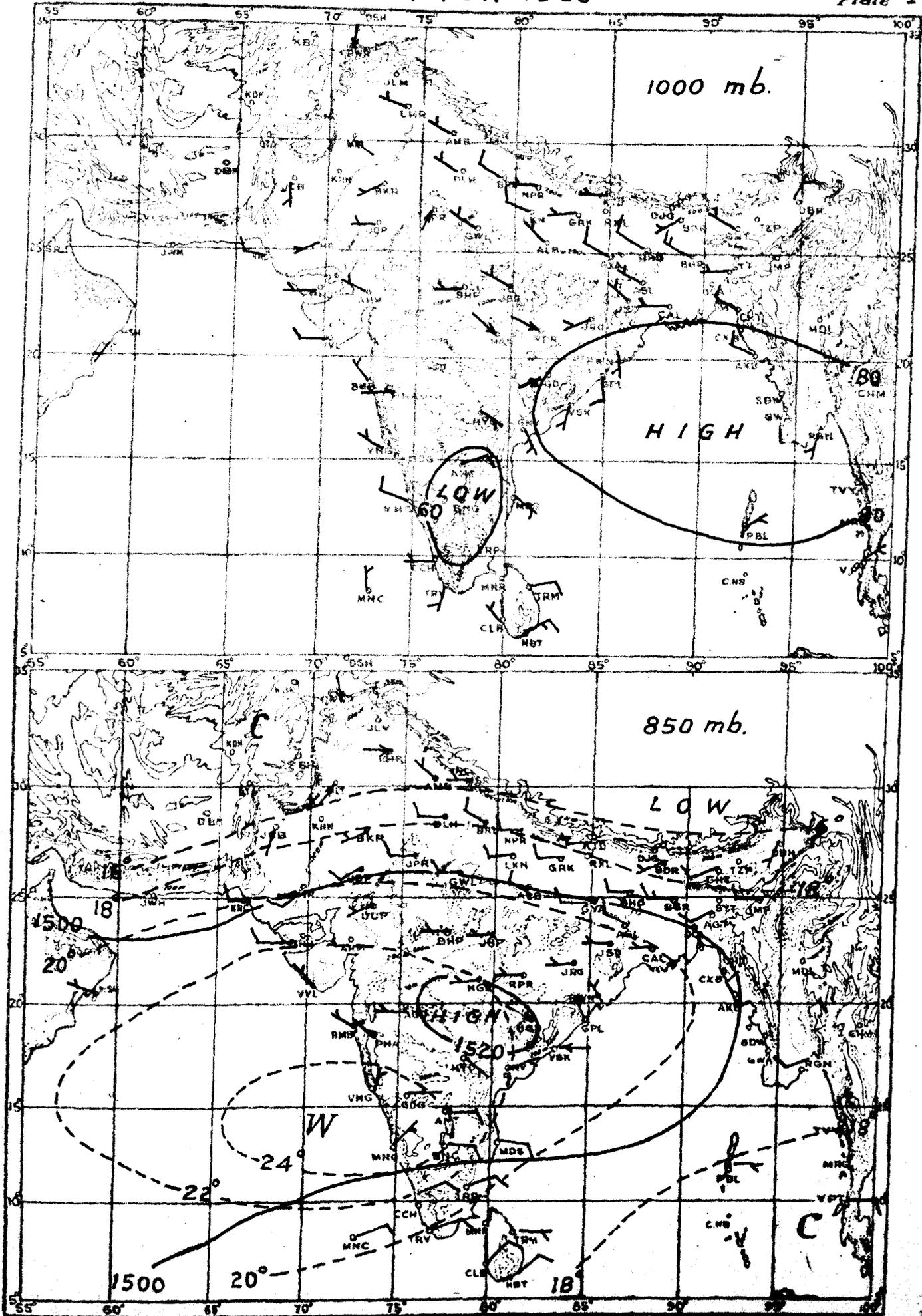
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

L.Met.D.

MARCH 1963

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ——— Contours in geopotential metres.

DDC/3579: 4: 67

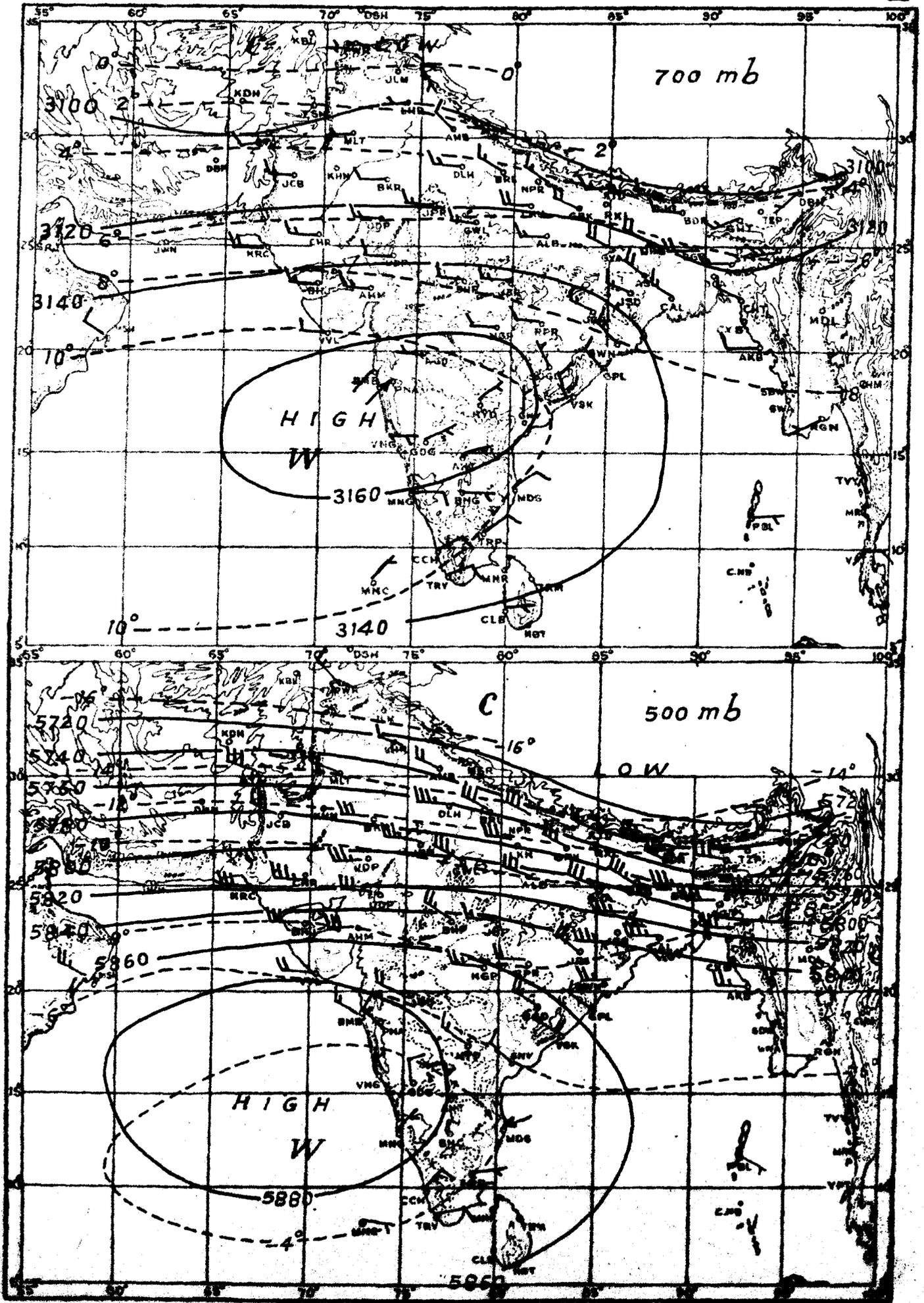
U.S. GOVERNMENT PRINTING OFFICE: 1963

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I Met. D.

MARCH 1963

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade

————— Contours in geopotential metres.

DDG/2579/4.57

200/10000/10

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

April

*Published by authority of the Government of India**Chief features:*

- (i) Movement of six western disturbances across north India causing good precipitation ;
 - (ii) Pronounced seasonal thunderstorm activity in northeast India and in the Peninsula ;
 - (iii) Development of a severe tornado over Sub-Himalayan West Bengal and Assam on 19th;
- and
- (iv) Sub-normal day temperatures over most parts of the country.

Six western disturbances moved across north India during the month. The first disturbance which moved across the Western Himalayas on 4th induced a low over southeast Rajasthan and adjoining west Madhya Pradesh. This low persisted over west Madhya Pradesh from 5th to 7th and later shifted slowly eastwards to east Uttar Pradesh on 9th. Thereafter it persisted there but weakened progressively and became unimportant by 12th. Under its influence there was good thunderstorm activity in the central parts of the country and in east Uttar Pradesh during the second week. The second western disturbance moving as an upper air trough caused general thundershowers in northwest India. The next two western disturbances which moved eastwards across the hills of west Uttar Pradesh during the third week caused a few showers in the Western Himalayas and adjoining plains. The fifth disturbance induced a low over east Uttar Pradesh on 24th and was associated with a deep trough aloft extending upto 14 kms a.s.l. This high level trough extended as far south as Lat. 13°N on 24th and 25th. The system moved away eastwards across Assam by 28th after causing fairly well distributed thunderstorm activity over the area extending from east Uttar Pradesh and the central parts of the country to Assam. The last western disturbance of the month persisted as an upper air trough over the Punjabs and adjoining Rajasthan from 28th to 30th and a few thundershowers occurred over northwest India towards the end of the month. The details of the movement and activity of the various western disturbances are given in the accompanying statement.

The seasonal thunderstorm activity in northeast India was well marked particularly in association with the movement of the western disturbances and the induced lows mentioned earlier. The seasonal trough of low pressure over this area was quite active during the second half of the month and in association with it there was pronounced thunderstorm activity and rain over Assam and West Bengal. Krishnagar recorded 7 cm of rain on 15th, Tura 9 cm on 17th and Digboi 7 cm on 20th. According to press reports, a violent tornado hit the two contiguous districts of Cooch Behar and Goalpara on the evening of 19th. 15 villages were devastated, 139 people killed and 20,000 badly affected by the tornado. At Cooch Behar hailstones measuring 14 cm in diameter fell.

A feeble trough in the low level easterlies appeared over the south Andaman Sea on 4th. It moved westwards across the Laccadive-Maldiva areas by 8th. Under its influence a few thundershowers occurred in the Bay Islands and in the south Peninsula. Kondul recorded 11 cm of rain on 4th. The trough of low pressure persisted in the east central Arabian Sea off the Konkan-Kanara coast till 14. Under its influence there was a marked incursion of moist air resulting in good thunderstorm activity over the Peninsula. Another trough in the easterlies moved across the extreme south Peninsula during the period 11th to 13th causing a few heavy showers there. Kodaikanal and Pamban recorded 7 cm of rain each on 12th and Mangalore 7 cm on 13th.

The seasonal trough of low pressure over the Peninsula was active during the second half of the month, causing spells of thundershowers in many parts. The activity increased when two troughs in the easterlies moved across the south Peninsula on 25th and 29th respectively. Some of the noteworthy amounts of rainfall recorded during this period were : Vishakhapatnam 9 cm on 19th, Alleppey 6 cm and Trivandrum 5 cm on 20th, Ongole 8 cm and Punalur 5 cm on 23rd, Minicoy 8 cm and Coonoor 5 cm on 24th, Punalur 8 cm on 25th and Kolhapur 5 cm on 29th.

Day temperatures remained generally below normal over the country during the month, except in northeast India and northwest India on a few days in the first week and during this second week respectively. The day temperatures were as much as about 12°C below normal in Gangetic West Bengal on 10th. They were also markedly below normal in northwest India on 24th and in the central parts of the country on 24th and 25th.

The total rainfall for the month was in large defect in west Rajasthan and the Konkan, in moderate defect in west Uttar Pradesh and the Punjab(I) and in slight defect in Assam, Bihar Plains and Jammu and Kashmir. It was normal in Madhya Maharashtra, the Madras State and Kerala, in slight excess in Sub-Himalayan West Bengal and east Rajasthan and in moderate excess in Orissa, Bihar Plateau, Vidarbha and Interior Mysore. It was in large excess over the rest of the country outside Himachal Pradesh. There was no rain in Saurashtra and Kutch.

Mean maximum temperature was above normal in the Arabian Sea Islands and below normal in Sub-Himalayan West Bengal, Orissa, the Punjab (I), Jammu and Kashmir, east Madhya Pradesh, Marathwada, Vidarbha, Andhra Pradesh, the Madras State and north Interior Mysore. It was normal over the rest of the country outside Himachal Pradesh. Mean minimum temperature was below normal in Marathwada, Vidarbha, Andhra Pradesh and the Arabian Sea Islands and normal over the rest of the country outside Himachal Pradesh.

Mean relative humidity in the morning was above normal in Bihar Plains, Uttar Pradesh, the Punjab(I), Madhya Pradesh, Vidarbha, Telangana and Rayalaseema and normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was normal in the Bay Islands, Assam, Gangetic West Bengal, west Uttar Pradesh, the Konkan, coastal Andhra Pradesh, coastal and south Interior Mysore, Kerala and the Arabian Sea Islands and below normal in Rayalaseema. It was above normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I.S.T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I.S.T. of the date given in the succeeding column.

POONA 5;

The 8th July 1963.

R. ANANTHAKRISHNAN,

for Director General of Observatories.

Errata to M.W.R. for the quarter April to June 1963.

Page No	Item/Station	Hour	Column	For	Read
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A P R I L 1963.

178	Chief features	-	2nd Line	this	the
178	Chief features	-	18th line	Utter	Uttar

Table I - Division

180	7. Jammu & Kashmir	-	4	-10.1	-1.7
180	14. Mysore	-	2	+57.3	57.3

Table I - Sub-Division

180	6. Bihar Plateau	-	4	-1.0	-0.8
-----	------------------	---	---	------	------

Table II

181	Dhubri	-	2	31.5	30.5
181	Burdwan	-	10	Not clear	18.5
182	Varenasi (Babatpur)	-	6	14.7	Reject
182	-do-	-	7	-7.5	"
182	-do-	-	8	11.4	"
182	-do-	-	9	10	"
183	Meerut	-	3	+1.4	-1.4
183	Ludhiana	-	16	-1.3	-0.3
184	Ajmer	-	3	-	0
184	Udaipur	-	3	-0	-0.8
184	Champa	-	12	+3.	+3.0
184	Raigarh	-	2	8.1	38.1
184	Radhanpur	-	2	8.8	38.8
185	Surendranagar	-	3	1.0	-1.0
185	Poona	-	19	-	3.5
186	Gadag	-	3	+0.8	-0.8
186	Bellary	-	12	+149.7	+49.7
187	Punalur	-	13	Not Clear	81.4
187	Cherrapunji	-	12	-375.6	-373.6
187	Katmandu	-	24	0	1
188	Hirakud	-	4	Not clear	41.2
188	Dadeldhura	-	2	21.5	21.1
188	Bhojpur	-	Spelling	-	Bhojpur

Table III

190	Agartala	0830	14	01	+0.1
192	Bhubaneshwar	0530	4	1107.9	1007.9
192	Ranchi Aerodrome	0830	9	11.2	11.3
193	Patna Aerodrome	2330	10	17.	17.7
193	Bhagalpur	0530	10	19.	19.0
193	-do-	0830	10	19.	19.4
193	Kheri	0830 & 1730	1	-	Delete (R)
195	Ambala (aerodrome)	2330	2	0830	2330
195	Patiala	0830 & 1730	2	1730 & 730	0830 & 1730
196	Ganganagar	1730	21	Blank	6
197	Jaisalmer	0830	23	18	10
197	Jodhpur	1130	8	9.4	19.4
197	Jaipur (Sanganer)	0530	16	Blank	0

Page No.	Station	Hour	Column	For	Read
197	Bhilwara	1730	20	Not clear	2
198	Udaipur	2330	8	13.5	18.5
198	Jhalwar	1730	7	37.6	37.0
198	Nimach	0830	19	9	0
199	Jabalpur	2330	2	330	2330
199	Ambikapur	0830	3	11	611.
199	Champa	0830	4	1009.6	1009.7
199	Dohad	0830	7	Not clear	27.6
200	Station next to Baroda			Not clear	Broach
200	Okna	0530	7	20.5	25.5
201	Station after Poona			Not clear	Jeur
202	Miraj	1730	8	20.0	22.2
202	Bir	0830	26	4	14
202	Visakhapatnam	0230	28	Blank	1
203	Nagarjunkonda	0830&1730	3	,,	..
203	Bhadrachalam	1730	27	1	0
205	Gadag	2330	4	009.4	1009.4
207	Abu	0830&1730	10	Blank	17.1 & 19.0
208	Name of the catchment		1	Mahnodi	Mahanadi
209	Okhaldunga	-	-	Remove *	against Okhaldunga
209	Angbung			give it against	Angbung.

Errata to upper air data : April 1963.

Last para on page 210 : first line : Read 'Surface' for 'Su:face'.

Tables IV and V : Upper wind data:

Page	Station	Time	Level	Element	For	Read
212	Agartala	0530	0.6	V	4.9	5.9
212	Ahmadabad	2330	3.6	n	10	1
215	Bhagalpur	1130	1.5	v	4.8	4.9
216	Bombay	0530*	0.3	D	361	360
216	Bombay	0530*	0.9	D	327	347
217	Darjeeling	0530	3.6	D	238	282
217	Di brugarh	1730	3.0	D	247	237
221	Jamshedpur	1730	6.0	n	5	4
222	Nagpur	1130	6.0	v	10.0	10.8
223	Port Blair	1130	7.2	v	4.5	4.4
225	Udaipur	1730	9.0	v	16.6	16.0
228	Vishakhapatnam	0530*	10.5	Time	1730*	0530*
229	Vishakhapatnam	1730*	10.5	Time	1730	1730*

Table VI : Radiosonde data:

		GMT				
231	Calcutta	00	800mb.	Ht. gpm	001	2001
231	Calcutta	00	700 mb	Ht. gpm	117	3117
231	Calcutta	00	300 mb.	Ht. gpm	9332	9532
235	New Delhi	12	600 mb.	Dew Point	163.0	263.0
235	Port Blair	12	800 mb.	Mean	288.0	289.0
235	Srinagar	12	700 mb.	Dew Point	269.0	269.9

Page No.	Station	Hour	Column	For	Read
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M A Y 1963.

237	Chief features	-	5th para 7th line	derails	details
239	Chief features	-	Heading line in bold letters	ent	statement

Table I : Division

240	9. Madhya Pradesh	-	7	Not clear	25
-----	-------------------	---	---	-----------	----

Table I : Sub-Division

240	10. Punjab (India) (including Delhi)	-	5	+1.3	-1.3
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Table II

241	Port Blair	-	12	+150.0	-150.0
246..	Foot note	-	-	(q)Mean of 29 days	(b)Mean of 29 days.
247	Tambaram (Aerodrome)	-	4	33.4	43.4
247	Cuddalore	-	1	Cuddalore R.S	Cuddalore
247	Cuddalore	-	7	-0.1	-1.0
247	Cuddalore	-	15	3	2
247	Coimbatore	-	7	-0.2	+0.2
247	Vedaranniyam	-	4	36.3	36.2
247	Bidar	-	3	-0.4	-1.4
247	Calicut	-	17	15.6	15.2
248	Ginabakar	-	8	20.0	20.5
248	Hirakud	-	4	42.5	42.9
249	Gallayana	-	4	31.3	31.8

Table III

250	Gohpur	1730	20	5	15
251	Dhubri	1730	9	26.6	22.6
251	Imphal (Tulihal)	0530	17	2	0
251	Imphal (Tulihal)	0830	17	3	0
251	Baghdogra	0530	5	980.3	990.3
252	Calcutta (Dum Dum)	0230	4	1003.6	1003.0
252	Midnapore	1730	3	11	11
252	Contai	0830	3	11	11
253	Gopalpur	2330	4	1004.3	1004.2
253	Kanchi Aerodrome	1130	8	20.	20.9
253	Kotihari	0830	14	+0.4	-0.4
253	Kotihari	1730	25	1	0
254	Gonda	0830	12	+1.3	+13
257	Bilaspur	1730	7	337	33.7
257	Quazigund	1730	7	20.0	20.6
260	Jabalpur	2330	25	3	1
260	Lambikapur	0830	25	1	3
261	Okha	2330	27,28	0,3	3,0
261	Dwarka	0830	12	2	-2
262	Mahuva	0830	8 to 11	-	Delete data
262	Veraval	2330	17 & 18	Not clear	23 and 8
262	Barnai	0830	9	Not clear	24.9
262	Ratnagiri	0830	15	Not clear	5.9

Page No.	Station	Hour	Column	For	Read
262	Devgarh	1730	11	Not clear	74
262	Vengurla	0830	5	+05.	+0.5
263	Ahmadnagar	1730	26	7	17
263	Kolhapur	0830	4	007.8	1007.8
263	Aurangabad	0830	6	—	0
264	Akola (Aerodrome)	0530	6	0	—
264	Akola	0830	14	+0.3	-0.3
264	Bramhapuri	0830	11	2	42
264	Gannavaram	0230	2	2230	0230
264	Nizamabad	0830	2	0530	0830
265	Bhadrachalam	1730	8	25.8	25.0
265	Arogyavaram	0830	7	22.3	27.3
265	Mettur Dam R.S.	1730	16	Blank	0
265	Cuddalore	1130	27	Blank	0
265	Cuddalore	1730	21	0	2
266	Coimbatore	0830	12	4	-4
266	Pamban	0830	24	5	6
266	Palayancottai	0830	24	0	1
267	Belgaum	0830	14	+0.1	-0.1
267	Belgaum (Sambra)	-	1	(Sambra)	(Sambra)
267	Fort Cochin	-	1	Port	Fort
268	Simla	1730	26	Not clear	5
269	Mercara	1730	23	0	2
269	Coonoor	-	2	1730	0830
269	Kodaikanal	0830	27	8	3
269	Panchet Hills	1730	15	4.3	4.8
269	Bagra Tawa	1730	9	17.8	7.8
270	-	-	Foot note	+ Data not available	* Data not available.

Excess to Upper Air data : May 1963.

Page	Station	Time	Level	Element	For	Read
272	Raipur			Particulars of station	1130	-
272	Siliguri			Particulars of station	-	1130

Tables IV and V : Upper wind data

274	Ambala	0530	7.2	v	13.2	14.4
274	Ambala	0530	7.2	D	268	294
275	Bahraich	0530	0.3	D	818	098 (a)
275	Bangalore	0530	-	Time	0530	0530
275	Bangalore	0530	3.6	D	067	062
275	Bangalore	0530	4.5	D	062	067
275	Bangalore	0530	7.2	v	3.3	3.3
275	Bareilly	1730	Surface	D	00	300
275	Begampet	0530	Surface	V	26	2.6
276	Begampet	2330	Surface	D	186	183
277	Bombay	1130	Surface	D	274	278
277	Bombay	1130	0.3	D	293	298
278	Dibrugarh	1130	3.0	D	29	219

Page	Station	Time	Level	Element	For	Read
278	Dibrugarh	1130	3.6	D	24	294
279	Gaya	1130	0.15	D	00	010
282	Jodhpur	0530	0.15	D	28	286
283	Minicoy	0530	7.2	L	09	099
287	Vijayawada	2330	0.6	v	5.6	6.5
288	Agartala	0530	16.2	D	208	280
289	Nagpur	1730	10.5	n	-	29

Table VI - Radiosonde data

292	Ahmadabad	00 Z	-	Surf. Pr.	993	999
292	Ahmadabad	00 Z	Surface	Mean	300.5	300.4
292	Allahabad	00 Z	400 mb.	Min.	24	249
292	Bombay	00 Z	1000 mb.	Ht. gpm	097	057
292	Calcutta	00 Z	175 mb.	Mean	218.4	218.5
292	Calcutta	00 Z	500 mb.	Td	264.7	-
295	Gauhati	12 Z	125 mb.	Ht. gpm	15379	15397
296	New Delhi	12 Z	700 mb.	Ht. gpm	3102	3120
296	New Delhi	12 Z	800 mb.	Max.	-	299
297	Srinagar	12 Z	600 mb.	Ht. gpm	4374	4375
297	Vishakhapatnam	12 Z	150 mb.	Ht. gpm	14294	14293

Page No.	Station	Hour	Column	For	Read
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J U N E 1963

299	Chief features	-	3rd para 6th line	tcoast	coast
299	Chief features	-	3rd para 7th line	he	the

Table II

302	Car Nicobar to North Lollimpur	-	28 & 29	Blank	0
302	Dibrugarh (Mohanbari)	-	3	-0.3	+0.3
302	Majbat	-	2	Blank	32.3
302	Golaghat	-	11	(n) 337.8	(d) 337.8
302	-	-	Foot note	-	Add "(n) Total or mean for 17 days"
302	Krishnanagar	-	10, 11 & 12	Not clear	231.2, 418.8 and +156.4 respectively.
303	Titlagarh	-	20(a)	0	2
303	Bhubaneshwar	-	20(a)	2	0
303	Daltonganj	-	7	9.0	9.6
303	Hazaribagh	-	16	-0.3	+0.3
303	Motihari	-	20(a)	0	..
303	Forbesganj	-	20(b)	6	16
303	Darbhanga	-	9	11,12	11,12, 30
303	Muzaffarpur	-	9	30	..
303	Dehri	-	3 and 7	-1.6 & -0.8	Delete and put ..

Page	Station	Hour	Column	For	Read
304	Agra (Aerodrome)	-	24	-	0
304	Adampur (Aerodrome)	-	20 (b)	3	6
304	Halwara (Aerodrome)	-	5	,9	3,9
304	Patiala	-	18	Not clear	9.6
305	Sonamarg	-	1	Sonamarg	Sonamarg*
305	Ganganagar	-	17	10.07	10.0
305	Bikaner	-	7	-0.3	+0.3
305	Bhopal (Bairagarh)	-	7	0.1	+0.1
305	Narsingapur	-	21	Blank	0
305	-	-	Foot note	-	Add "(b)Mean of 29 days".
306	Umaria	-	25	0	3
306	Pendra	-	20 (a)	0	1
306	Champa	-	25	0	3
306	Broach	-	24	Blank	0
307	Baramati	-	9	2,1,28	21,28
307	Bir	-	13	72.2	72.0
307	Ramgundam	-	3	+3.4	-3.4
307	-	-	Foot note	(a)Mean of 28 days.	(c)Mean of 28 days.
308	Madras (Nungambakkem)	-	22	7 (b)	0 (1)
308	Tiruchirapalli	-	17	18.2	18.2
308	-	-	Foot note	(b)Mean of 29 days.	(1)Mean of 19 days.
308	Tondi	-	11	39.5	33.5
308	Tuticorin	-	11	9	0
309	Dharampur	-	20 (a)	0	-
309	Lokpal	-	8	2.3	-2.3
309	Cherapunji	-	12	+10700	+1070.0
309	Meithon	-	28	Blank	0

Table III

311	Long Island	1730	7	27.0	27.8
311	Car Nicobar	0830	28	0	3
311	Gohpur	1730	28	1	0
312	Agartala	1130	25 and 26	0 and 3	3 and 0
314	Phulbani	1730	10	27.7	27.6
314	Puri	0830&1730	16	3 & 3	0 & 0
314	Hazaribagh	0830	22 & 24	3 & 4	4 & 3
314	Motihari	0830	2	0830	+ 0830
314	-	-	Foot note	-	Add "+ observations for 18 da
315	Bhagalpur	0530	15	3.3	3.2
315	Lucknow	0830	10	28.5	28.4
315	Lucknow	0830	28	Blank	0
317	Pethankot	0830	7	32.3	32.5
318	Srinagar (Aerodrome)	0530	5	827.6	827.5
318	Quazigund	1730	28	Blank	0
318	Jammu (Aerodrome)	0530	5	994.6	964.6
319	Mahajan	0830	20 & 21	1 & 0	0 & 1
319	Barmer	0830	14	+0.5	-0.5

Page No.	Station	Hour	Column	For	Read
320	Jhelwar	1730	28	Blank	0
321	Satna	0830	4	1001.2	1000.2
321	Deesa	1730	4	9990.2	998.2
323	Veraval	1130	13	4.	4.1
323	Dahanu	0830	4	1005.3	1005.5
323	Bhira	0830	8	Not clear	24.6
323	Bhira	1730	8	24.	24.8
323	Devgarh	0830	6	-1.7	+1.7
324	Poona (Aerodrome)	0530	13	5.9	4.9
324	Bir	0830	9	23.3	21.3
324	Akola Aerodrome	0830	2	2330	0830
325	Sironcha	1730	26	3	8
326	Tiruppattur	0830	2	*0830	0830
326	Nettur Den R.S.	0830 & 1730	2	*0830, *1730	0830, 1730 Delete also foot note for *
327	Mangalore (Bajpe)	0530	23	0	1
327	Mangalore	0830	23	1	0
328	Alleppey	0830	21	Not clear	6
329	-	-	Foot note	-	Add "(b)Mean of 29 days."
330	Katmandu	0830	17	Blank	0
330	Hazaribaga	1730	4	996.6	996.7
330	Bokaro	1730	4	996.7	996.6

Errata to Upper air data June 1952.

Page	Station	Time	Level	Element	For	Read
332	-	-	-	-	49 stations	39 stations
333	Jaipur	-	-	Time	1130	- (Blank)
333	Jamshedpur	-	-	Time	- (Blank)	1130 (add)

Table IV and V : Upper wind data

334	Ahmedabad	0530*	2.1	D	255	225
335	Asensol	1730	3.6	D	336	306
335	Asensol	2330	1.5	v	8.1	2.1
336	Aurangabad	1730	Surface	v	5.6	5.3
336	Bairvaich	0530	2.1	v	3.6	3.9
336	Bhairvaich	1130	2.1	v	3.9	3.6
337	Bhopal	0530	0.15	v	3.2	8.2
337	Bhopal	2330	0.9	v	8.6	8.9
339	Dibrugarh	0530	Surf.	V	0.5	0.9
341	Garakhpur	0530	5.4	D	262	022
342	Jabalpur	0530	0.6	V	3.4	8.4
343	Jharsuguda	0530	0.6	v	4.9	4.6
344	Mangalore	0530	-	Time	0530*	0530 (Delete*)
344	Mangalore	2330	-	Time	2330*	2330 -do-
347	Tiruccirapalli	1730	0.3	D	264	265
349	Gahati	1130	-	Time	1133	1130
349	Gopalpur	1730	12.0	-	1.5	7.5
349	Ludlow	0530	-	time	0530*	0530 (Delete*)
350	New Delhi	1730*	-	time	1730	1730*
350	New Delhi	1730*	12.0	D	286	285
350	Vijaywada	0530	10.5	V	21.3	11.3

Statement showing the movement and activity of western disturbances during the month of April 1963

S. No.	Period	Course	Region affected	Nature of precipitation	Period	Remarks
1.	1st-4th	Baluchistan-west Rajasthan-Punjab (P)-Western Himalayas.	West Rajasthan Jammu and Kashmir Punjab (I) Himachal Pradesh West Uttar Pradesh	Scattered rain. Scattered/fairly widespread rain Local/Scattered rain. Local rain. Local/scattered rain.	3rd 3rd, 4th 3rd, 4th 4th 3rd-5th	Induced low developed over southeast Rajasthan and neighbourhood on 4th and moved slowly eastwards to east Uttar Pradesh by 9th and weakened there in the course of the next 3 days.
2.	4th-9th	Baluchistan-Afghanistan-northern divisions of West Pakistan-Western Himalayas.	Rajasthan Jammu and Kashmir Punjab (I) Himachal Pradesh West Uttar Pradesh	Scattered rain. Scattered rain or snow. Scattered rain. Fairly widespread rain. Scattered rain.	7th 6th, 7th 9th 9th 8th-10th	As an upper air trough.
3.	13th-17th	Baluchistan-northern divisions of West Pakistan-Punjab (I)-West Uttar Pradesh	Jammu and Kashmir Punjab (I) Himachal Pradesh West Uttar Pradesh	Scattered/fairly widespread rain. Scattered rain. Local rain. Scattered rain or snow.	15th and 17th 15th-17th 15th 14th-18th	
4.	19th-20th	Northern divisions of West Pakistan-Hills of West Uttar Pradesh.	Jammu and Kashmir Punjab (I) Himachal Pradesh West Uttar Pradesh	Local scattered rain. Scattered rain or snow. Local rain. Scattered rain.	18th-20th 19th, 20th 19th 20th, 21st	As an upper air trough.
5.	21st-24th	North Baluchistan and adjoining Afghanistan-The Punjab-west Uttar Pradesh.	East Rajasthan Jammu and Kashmir Punjab (I) West Uttar Pradesh	Scattered rain. Scattered/local rain. Scattered rain. Local/scattered rain.	24th, 25th 23rd, 24th 23rd-25th 24th-26th	Induced low formed over east Uttar Pradesh on 24th and moved away eastwards across Assam by 24th. Associated trough aloft well marked and extended upto 14 kms a. s. l. and southwards upto Lat. 30°N on 24th and 25th.
6.	26th-30th	Baluchistan and adjoining Afghanistan-Northwest Rajasthan and adjoining Pakistan-Western Himalayas.	Rajasthan. Jammu and Kashmir Punjab (I). Himachal Pradesh West Uttar Pradesh	Scattered rain. Local rain. Scattered rain. Local rain. Scattered/local rain.	30th 27th-30th 28th-30th 30th 28th-30th.	As an upper air trough.

Table with 28 columns and multiple rows of meteorological data. Columns include: Sub-Division and station, Hour of observation I.S.T., Station elevation in metres, Mean pressure in millibars (At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mms., Relative humidity %, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind speed in Km. per hour (82 or more, 20 to 61, 1 to 19), and No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—APRIL, 1963 (CHAITRA 11 VAISAKHA 10, 1885 SAKA)

Table with 28 columns: Sub-Division and station, Hour of observation I.S.T., Station elevation in metres, Mean pressure in millibars (At mean sea level, At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mbs., Relative humidity %, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind speed in Km. per hour (62 or more, 20 to 61, 1 to 19), Wind speed (K.m.p.h.), and No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

Sub-Division and Station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity%	Departure from normal	Cloud amount (Oktas)		Mean wind speed in Km. per hour	W (Km. p.h.)			No. of observations									
			At mean sea level or height in g.p.m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction									
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Hydrometeorological Observatories—Contd.																											
	Kosi Catchment—Contd.																										
Taplethok	0830	..	..	..	..	18.7	14.2	10.8	12.9	60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	18.9	13.8	9.8	12.1	55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur	0830	..	..	..	..	18.1	13.8	10.9	13.0	63	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	17.7	12.9	9.4	11.8	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung	0830	..	..	..	..	16.6	12.5	9.1	11.9	63	..	4.3	..	..	..	..	..	0	1	0	0	0	0	0	0	29	0
	1130	..	..	..	..	19.3	13.3	8.7	11.4	53	..	5.6	..	..	..	..	..	0	3	0	0	13	3	6	1	4	0
	1730	..	..	..	..	16.4	12.3	9.1	11.6	65	..	6.9	..	..	..	..	..	0	4	0	1	11	3	4	0	7	0
Okhaldhunga*	0830	..	..	..	..	16.8	11.9	7.8	10.8	59	..	3.6	..	3.0	0	0	20	1	0	1	2	9	3	3	1	10	0
	1130	..	..	..	..	19.3	12.9	7.2	10.7	50	..	4.2	..	7.2	0	0	26	0	1	1	0	1	7	14	2	4	0
	1730	..	..	..	..	16.7	11.7	7.0	10.5	57	..	5.5	..	11.1	0	5	20	1	1	1	0	2	1	16	3	5	0
Chainpur	0830	..	..	..	..	19.7	14.5	10.5	12.7	55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	19.9	14.3	9.9	12.2	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angbung	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barahakshetra	0830	146	1010.1	993.5	..	26.3	19.2	14.0	16.5	49	..	3.6	..	4.3	0	0	28	1	3	1	2	4	9	4	4	2	0
	1130	..	1008.3	992.3	..	30.6	21.3	15.4	17.7	41	..	3.9	..	7.2	0	0	30	0	0	0	0	1	17	7	5	0	0
	1730	..	1005.0	989.1	..	30.0	20.6	14.0	16.6	42	..	2.2	..	4.3	0	0	27	1	2	0	3	2	14	3	2	3	0
Tista Catchment																											
Gangtok	0830	1812	1497.9	819.2	..	15.1	11.9	9.4	11.9	70	..	4.3	..	1.1	0	0	10	3	7	0	0	0	0	0	0	20	0
	1130	..	1489.5	819.1	..	18.9	14.5	11.5	13.7	64	..	5.9	..	4.1	0	0	29	0	3	0	1	9	12	4	0	1	0
	1730	..	1469.1	816.7	..	15.0	12.8	11.2	13.4	79	..	6.9	..	5.7	0	0	23	2	6	4	2	6	3	0	0	7	0
Gezing	0830	..	..	..	..	17.0	14.0	12.0	14.0	72	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	17.0	14.2	12.4	14.4	74	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Data not available.

MONTHLY MEANS OF UPPER WINDS

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 40 stations all the observations were taken by means of pilot balloons and at 14 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data up to 9.0 km. a. m. s. l. are given under Table IV and data above 9.0 km. a. m. s. l. under Table V.

In Tables IV and V :

n—represents the number of observations ;

V—represents the mean wind speed in metres per second irrespective of direction ;

v—represents the resultant mean velocity in metres per second ;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Su face, 0.15 km. a. g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a. m. s. l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a. m. s. l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.}

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N.	Long. E.	Height of Anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
1.	Agartala	23°53'	91°15'	17	28th November, 1951	0530	1130	1730	2330
2.	Ahmadabad	23°04'	72°38'	61	19th May, 1928	0530*	1130	1730*	2330
3.	Allahabad/Bamhrauli	25°27'	81°44'	103	28th February, 1930	0530*	1130	1730*	2330
4.	Ambala	30°23'	76°46'	279	1st April, 1941	0530	1130	1730	2330
5.	Anantapur	14°41'	77°37'	365	12th February, 1946	0530		1730	2330
6.	Asansol	23°41'	86°59'	135	29th May, 1942	0530		1730	2330
7.	Aurangabad/Chikalthan	19°51'	75°24'	583	7th October, 1951	0530		1730	2330
8.	Bahraich	27°34'	81°36'	134	1st October, 1961	0530	1130	1730	
9.	Bangalore	12°58'	77°35'	936	19th May, 1915	0530@	1130	1730@	2330
10.	Bareilly	28°22'	79°24'	181	12th January, 1943	0530		1730	
11.	Begampet	17°27'	78°28'	543	1st September, 1929	0530		1730	2330
12.	Bhagalpur	25°14'	86°57'	61	19th May, 1950	0530		1730	
13.	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943	0530		1730	2330
14.	Bhubaneswar	20°15'	85°50'	54	5th December, 1942	0530		1730	2330
15.	Bhuj/Rudramata	23°15'	69°48'	90	14th September, 1937	0530		1730	2330
16.	Bikaner	28°00'	73°18'	229	18th October, 1946	0530		1730	2330
17.	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933	0530*	1130	1730*	2330
18.	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921	0530*	1130	1730*	2330
19.	Cochin/Willingdon†	09°56'	76°14'	13	16th March, 1942	0530		1730	2330
20.	Darjeeling	27°03'	88°16'	2115	21st May, 1956	0530		1730	
21.	Dehra Dun	30°19'	78°03'	692	1st October, 1958	0530		1730	
22.	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June, 1948	0530	1130	1730	2330
23.	Gadag	15°25'	75°38'	650	3rd May, 1943	0530		1730	2330
24.	Gauhati	26°05'	91°43'	55	12th March, 1955	0530*	1130	1730*	2330
25.	Gaya	24°45'	84°57'	119	19th March, 1937	0530		1730	2330
26.	Gopalpur	19°16'	84°53'	24	15th February, 1946	0530		1730	2330
27.	Gorakhpur	26°45'	83°22'	83	5th January, 1943	0530		1730	
28.	Gwalior	26°14'	78°15'	208	7th May, 1938	0530	1130	1730	2330
29.	Imphal/Tulihal	24°46'	93°54'	782	8th March, 1952	0530	1130	1730	2330
30.	Jabalpur	23°10'	79°57'	402	30th July, 1928	0530		1730	2330
31.	Jagdarpur	19°05'	82°02'	562	25th March, 1948	0530		1730	2330
32.	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953	0530		1730	2330
33.	Jamshedpur	22°49'	86°11'	144	23rd July, 1942	0530		1730	
34.	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530		1730	2330
35.	Jodhpur	26°18'	73°01'	229	15th October, 1934	0530*	1130	1730*	2330
36.	Lucknow/Amausi	26°45'	80°53'	133	20th November, 1950	0530		1730	2330
37.	Madras/Minambakkam	13°00'	80°11'	29	8th April, 1926	0530*	1130	1730*	2330
38.	Mangalore/Bajpe	12°55'	74°53'	104	25th May, 1959	0530		1730	2330
39.	Minicoy	08°18'	73°00'	15	14th April, 1941	0530		1730	2330
40.	Nagpur/Sonegoan	21°06'	79°03'	316	23rd April, 1943	0530*	1130	1730*	2330
41.	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936	0530*	1130	1730*	2330
42.	Poona	18°32'	73°51'	593	5th January, 1925	0530		1730	2330
43.	Port Blair	11°40'	92°43'	95	29th October, 1945	0530*	1130	1730*	2330
44.	Raipur	21°14'	81°39'	308	15th July, 1944	0530		1730	2330
45.	Raxaul	26°59'	84°51'	83	28th October, 1957	0530	1130	1730	
46.	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530	1130	1730	2330
47.	Srinagar	34°06'	74°48'	1603	1st August, 1962	0530*		1730*	
48.	Tiruchirappalli	10°46'	78°43'	96	22nd June, 1936	0530		1730	2330
49.	Trivandrum	08°29'	76°57'	73	8th December, 1928	0530*	1130	1730*	2330
50.	Udaipur	24°35'	73°42'	587	24th June, 1947	0530		1730	2330
51.	Vengurla	15°52'	73°38'	8	22nd November, 1941	0530		1730	2330
52.	Veraval	20°54'	70°22'	17	13th October, 1941	0530		1730	2330
53.	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942	0530		1730	2330
54.	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928	0530*	1130	1730*	2330

*Radio wind ascents.

@Radiosonde ascents followed by optical theodolite.

†Naval Meteorological office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Station	AGARTALA																AHMADABAD							
	0530				1130				1730				2330				0530*				1130			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	2.3	1.3	155	30	2.3	1.2	190	30	2.5	1.6	179	30	2.6	1.7	173	30	2.3	1.9	319	30	3.3	1.1	329
0.15 a.g. . .	28	5.9	2.5	172	29	3.9	2.7	175	30	5.4	3.5	184	29	6.8	3.6	185	30	7.9	6.2	325	30	3.8	1.4	327
0.3 a.m.s.l. .	28	5.9	3.3	178	29	4.1	2.8	184	30	5.8	4.3	181	29	7.3	5.1	195	30	8.1	6.4	327	30	3.7	1.6	330
0.6 „ . . .	28	4.9	3.9	193	29	4.2	3.3	191	30	5.8	4.9	192	29	7.5	5.5	212	30	8.2	6.2	331	30	4.1	1.9	331
0.9 „ . . .	25	5.9	4.5	222	29	4.5	3.5	208	30	5.5	4.8	203	29	6.6	5.6	220	30	7.0	4.3	330	30	4.4	1.7	315
1.5 „ . . .	24	6.0	5.3	252	29	5.7	4.5	244	29	5.7	4.7	221	29	5.9	5.0	240	30	5.3	3.2	298	29	5.2	2.2	270
2.1 „ . . .	23	7.5	6.8	263	24	6.3	5.4	254	26	6.1	5.1	255	26	5.9	5.4	260	30	5.2	3.2	264	29	6.2	3.5	243
3.0 „ . . .	19	7.5	6.4	272	16	7.2	6.4	272	25	8.6	7.5	269	24	7.4	6.5	271	30	7.4	5.7	237	28	7.6	5.5	242
3.6 „ . . .	18	8.7	7.0	287					22	9.6	8.8	276	9	6.2	5.6	278	30	8.5	6.0	235	26	9.4	7.2	239
4.5 „ . . .	14	10.8	9.8	283					18	10.6	9.7	268	1	8.5	8.5	255	30	8.5	6.5	250	23	10.2	7.7	251
5.4 „ . . .	10	11.1	8.4	274					14	12.3	11.0	261					30	9.3	6.9	256	20	11.4	9.3	259
6.0 „ . . .	9	12.2	9.0	275					13	12.3	11.4	265					30	11.4	9.1	262	17	12.9	11.2	266
7.2 „ . . .	4	11.9	11.0	275					11	15.2	14.3	256					30	15.9	13.9	270	16	15.3	13.3	271
9.0 „ . . .	3	16.8	16.4	278					5	21.0	19.8	260					28	21.9	20.1	274	11	20.4	18.6	277

Station	AHMADABAD								ALLAHABAD/BAMHRAULI															
	1730*				2330				0530*				1130				1730*				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	2.3	1.9	275	30	2.4	1.8	258	30	0.6	0.1	127	30	1.1	0.5	270	30	1.9	1.3	302	30	0.9	0.2	328
0.15 a.g. . .	30	4.3	3.3	278	30	8.4	6.0	268	30	5.5	0.5	205	29	3.3	1.5	271	30	4.7	3.3	315	30	7.1	2.6	004
0.3 a.m.s.l. .	30	4.5	3.4	278	30	8.3	6.0	267	30	5.5	0.4	202	29	3.5	1.8	275	30	4.7	3.2	317	30	7.3	2.8	009
0.6 „ . . .	30	4.5	3.5	273	30	7.7	6.0	282	30	5.4	1.8	283	29	3.9	1.7	271	30	5.2	4.0	319	30	6.5	2.9	355
0.9 „ . . .	30	4.8	3.9	273	30	6.7	5.3	287	30	5.2	2.1	277	30	3.7	1.7	275	30	4.5	3.4	314	30	5.2	2.6	330
1.5 „ . . .	30	4.8	3.9	274	30	5.3	4.0	284	30	4.7	3.4	294	29	4.0	3.0	265	30	4.7	3.8	305	29	4.3	2.8	298
2.1 „ . . .	30	5.4	4.5	273	30	5.3	3.2	268	30	6.0	4.5	293	28	5.3	3.9	265	30	5.4	4.6	286	27	6.1	4.6	283
3.0 „ . . .	30	6.9	5.5	260	30	7.2	4.0	255	30	8.6	7.5	283	26	8.0	6.6	285	29	7.3	6.3	280	19	8.5	6.9	270
3.6 „ . . .	30	7.9	5.8	251	10	9.5	9.5	240	30	10.8	9.6	289	23	9.1	8.0	290	29	9.5	8.1	282	9	9.6	6.8	264
4.5 „ . . .	30	8.2	6.8	252					30	11.6	10.4	291	21	12.0	10.8	285	28	11.3	8.7	288	2	7.7	6.9	285
5.4 „ . . .	30	9.6	7.7	262					30	12.0	10.0	285	18	12.6	11.5	285	28	12.1	11.3	286				
6.0 „ . . .	30	11.1	8.5	270					30	12.2	11.0	281	16	13.4	11.9	285	28	13.1	12.0	289				
7.2 „ . . .	30	14.9	12.9	270					29	15.3	14.1	280	12	15.3	13.7	285	27	13.4	12.4	285				
9.0 „ . . .	30	21.0	18.7	267					24	20.4	18.8	275	6	14.7	12.9	272	18	16.7	15.5	282				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Station	AMBALA																ANANTAPUR											
	0530				1130				1730				2330				0530				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.4	0.4	330	30	1.5	0.2	166	30	2.1	0.9	303	30	1.0	0.6	337	30	1.2	0.6	197	30	2.8	2.4	065				
0.15 a.g. . .	30	6.3	1.9	360	30	3.3	0.2	255	30	5.2	2.7	307	30	7.0	4.1	354	30	4.5	1.9	211	30	4.0	3.7	062				
0.3 a.m.s.l. .	30	2.7	0.6	356	30	2.5	0.4	173	30	3.1	1.6	303	30	2.7	1.6	350												
0.6 „ . . .	30	5.9	2.3	340	30	4.2	0.3	275	30	5.8	3.1	299	30	6.8	4.3	347	30	4.5	2.8	219	30	3.7	3.4	062				
0.9 „ . . .	30	5.5	3.3	328	30	4.5	0.9	309	30	6.2	3.5	301	30	5.8	3.8	343	30	4.8	3.0	199	30	3.5	3.1	075				
1.5 „ . . .	30	4.9	3.9	324	30	4.1	2.2	279	30	5.8	3.4	297	30	4.7	3.4	318	30	4.0	2.3	169	30	3.9	2.9	087				
2.1 „ . . .	29	5.3	4.3	312	30	4.3	2.5	278	29	5.7	4.4	291	30	5.1	3.5	292	30	3.5	2.2	080	30	4.1	2.8	091				
3.0 „ . . .	27	7.0	5.3	296	30	6.2	2.7	299	29	6.3	4.9	284	28	6.0	4.4	284	28	5.0	3.7	040	26	4.2	2.8	080				
3.6 „ . . .	5	5.0	3.7	295	27	6.3	3.0	303	28	7.0	5.4	287	16	6.0	4.5	280	27	5.4	3.6	034	24	4.4	2.0	095				
4.5 „ . . .					21	7.2	5.4	291	24	7.6	6.2	285	1	5.0	5.0	315	26	5.0	1.5	353	19	4.8	2.0	260				
5.4 „ . . .					15	9.1	6.9	294	21	9.7	7.7	284	1	5.0	5.0	320	23	5.0	3.9	262	16	6.4	5.0	277				
6.0 „ . . .					9	10.3	8.9	288	19	11.4	9.3	292	1	4.0	4.0	305	19	6.1	5.3	273	12	7.7	6.4	272				
7.2 „ . . .					5	13.2	11.0	288	6	14.7	11.5	304	1	7.0	7.0	320	14	9.6	9.0	276	8	11.7	9.6	275				
9.0 „ . . .					3	18.5	16.5	268	3	14.5	10.4	228	1	9.5	9.5	285	6	16.1	15.4	273	5	18.2	16.6	274				

Station	ANANTAPUR				ASANSOL																AURANGABAD/ CHIKALTHAN							
	2330				0530				1130				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	3.6	3.0	100	30	0.9	0.5	222	30	2.4	0.9	275	30	1.8	0.6	059	30	2.2	1.1	163	30	2.3	1.7	283				
0.15 a.g. . .	28	7.6	7.0	105	29	5.9	2.5	231	30	4.4	1.5	257	30	4.5	1.4	060	29	7.2	3.2	146	30	5.6	3.7	287				
0.3 a.m.s.l. .					29	6.5	3.3	230	30	4.2	1.5	258	30	4.7	1.2	057	29	7.5	3.3	150								
0.6 „ . . .	28	7.8	7.1	107	29	7.4	5.1	250	30	4.7	1.5	280	30	4.7	0.4	088	29	8.1	3.7	175								
0.9 „ . . .	28	7.0	6.6	113	29	7.3	4.9	265	30	4.1	2.2	281	30	4.6	0.7	272	29	6.7	3.0	198	30	7.4	3.9	300				
1.5 „ . . .	28	4.4	3.8	115	28	6.3	5.5	283	30	5.1	3.6	271	30	5.5	3.8	271	28	5.8	3.2	262	30	7.6	4.5	329				
2.1 „ . . .	27	3.4	2.6	120	27	6.9	6.1	285	27	6.1	5.4	275	30	6.8	5.6	273	28	6.4	5.0	277	29	5.9	4.1	353				
3.0 „ . . .	23	3.5	1.3	065	24	9.0	7.7	293	20	7.1	6.3	276	29	9.3	8.2	284	27	9.8	8.6	281	26	5.4	1.8	013				
3.6 „ . . .	21	3.8	1.5	015	20	9.5	8.1	291					27	11.1	10.1	284	23	11.3	10.1	288	11	5.1	2.6	250				
4.5 „ . . .	11	4.9	4.3	328	11	8.8	8.0	296					17	12.2	11.1	285	15	13.0	11.8	290								
5.4 „ . . .	5	3.3	1.8	345	8	11.3	8.7	288					6	15.3	14.2	284	3	6.7	0.6	288								
6.0 „ . . .	3	3.7	2.8	326	5	10.1	9.5	280					5	20.2	18.4	286	1	7.5	7.5	040								
7.2 „ . . .	1	7.0	7.0	295	4	16.1	15.6	278					3	24.0	22.6	269												
9.0 „ . . .					1	21.5	21.5	290					1	28.5	28.5	265												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Station	AURANGABAD/CHIKALTHAN								BAHRAICH												BANGALORE							
	1730				2330				0530				1130				1730				0530@							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.9	1.0	283	30	3.7	2.4	309	30	0.7	0.3	081	30	0.9	0.1	024	30	0.9	0.7	290	30	1.6	0.3	197				
0.15 a.g.	30	4.9	2.3	293	30	8.0	4.3	312	30	7.2	2.4	076	30	3.8	0.4	077	30	4.9	4.2	290	28	4.1	1.8	210				
0.3 a.m.s.l.									30	7.4	1.5	081	30	3.8	0.2	049	30	5.0	4.2	290								
0.6 "									30	7.4	1.2	288	30	4.4	0.6	298	30	5.7	5.0	292								
0.9 "	30	4.9	2.8	303	30	8.6	5.5	312	30	6.7	2.7	290	30	4.9	2.1	299	30	5.9	5.2	286								
1.5 "	30	4.1	2.2	296	30	8.3	6.5	315	30	6.3	4.7	298	30	6.6	5.1	286	30	6.9	6.1	294	28	4.5	1.6	160				
2.1 "	30	4.4	2.4	286	30	6.3	4.8	329	30	8.3	7.3	300	29	8.2	7.2	294	30	8.1	7.4	291	28	4.4	2.8	073				
3.0 "	23	5.1	3.6	271	21	5.6	1.6	347	30	10.6	9.2	294	29	10.6	9.6	299	28	10.2	9.0	293	28	6.0	5.2	055				
3.6 "	14	4.4	2.9	262	17	5.3	1.0	214	24	11.3	10.5	298	29	11.8	10.6	297	28	11.3	10.4	297	28	5.7	4.3	047				
4.5 "	7	6.6	5.3	258	2	7.7	6.5	178	15	12.4	11.7	298	27	12.6	10.7	294	25	11.5	10.1	295	28	4.2	0.5	005				
5.4 "	6	9.2	8.2	282					5	8.3	7.2	317	23	11.4	10.2	296	20	11.7	10.5	291	28	4.9	2.7	266				
6.0 "	6	10.6	9.6	280					5	8.9	8.4	309	22	12.8	11.7	293	19	12.2	10.6	290	23	5.6	4.6	262				
7.2 "									4	6.1	5.2	344	15	12.4	9.4	278	13	11.8	10.2	292	22	8.0	7.3	277				
9.0 "													8	14.4	10.3	287	3	19.7	14.1	300	19	13.6	13.0	274				

Station	BANGALORE								BAREILLY								BEGAMPET											
	1130				1730@				2330				0530				1730				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.9	0.9	103	30	2.7	1.5	078	30	2.8	2.3	122	30	1.7	0.6	360	30	1.7	1.3	301	30	1.3	1.0	140				
0.15 a.g.	29	2.6	1.1	128	30	4.1	2.8	080	28	7.1	6.4	137	30	6.1	1.1	001	30	4.8	4.0	299	29	5.1	2.9	163				
0.3 a.m.s.l.													30	5.8	1.6	018	30	4.6	3.9	298								
0.6 "													30	6.0	1.6	307	30	5.7	3.8	304	29	3.6	2.0	192				
0.9 "													30	5.8	2.6	295	30	5.9	5.2	295	29	6.3	4.8	176				
1.5 "	30	2.4	1.1	100	30	4.4	3.1	072	28	7.0	6.3	136	30	5.6	4.5	307	30	6.1	5.3	288	29	4.8	3.1	174				
2.1 "	29	3.3	2.7	074	30	4.4	3.3	070	28	3.4	1.8	093	30	6.8	6.3	304	27	6.2	5.9	281	29	3.9	0.7	173				
3.0 "	27	6.3	5.3	061	29	4.5	3.0	060	26	4.1	2.9	050	28	9.8	8.4	292	27	8.9	8.4	286	29	4.8	3.2	023				
3.6 "	21	6.0	5.1	066	29	4.5	2.8	050	19	3.6	2.0	030	14	10.4	9.8	298	26	10.1	9.1	289	28	5.7	4.3	003				
4.5 "	19	4.7	1.2	089	24	4.1	1.6	305	12	4.6	1.3	343	7	12.4	12.1	306	25	11.0	10.3	290	25	7.1	4.2	151				
5.4 "	17	5.3	1.4	232	22	5.7	3.5	284	9	3.8	2.1	275	2	10.0	10.0	321	23	12.6	11.4	291	23	7.0	5.1	288				
6.0 "	16	6.3	3.2	252	21	6.9	4.6	268	4	3.0	1.9	264	1	6.5	6.5	305	19	12.3	10.6	291	23	8.8	7.9	285				
7.2 "	13	9.8	7.8	271	19	10.3	8.8	278	1	7.0	7.0	265					3	12.7	12.0	283	15	11.9	10.8	271				
9.0 "	7	16.4	15.6	278	16	15.4	14.0	280													6	16.5	16.3	283				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Station	BEGAMPET								BHAGALPUR												BHOPAL/BAIRAGARH							
	1730				2330				0530				1130				1730				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.8	0.7	115	30	2.0	1.5	119	30	1.9	0.9	110	30	2.3	0.6	025	30	2.1	0.4	335	30	2.3	0.6	248				
0.15 a.g. . .	30	3.4	1.7	119	30	7.2	6.3	134	30	5.9	2.3	132	30	4.6	1.4	049	30	5.4	1.0	321	30	6.9	1.7	265				
0.3 a.m.s.l. .									30	6.1	2.1	170	30	4.7	1.0	027	30	5.5	1.3	323								
0.6 " . . .	30	3.3	1.7	126	30	4.5	3.8	129	30	6.9	2.5	233	30	4.5	0.3	025	30	5.3	2.1	298	30	6.0	1.7	249				
0.9 " . . .	30	3.1	1.7	115	30	7.6	6.6	130	30	6.9	2.7	256	29	5.3	1.5	235	30	5.7	3.1	281	30	7.6	2.7	308				
1.5 " . . .	30	2.8	1.8	131	30	4.9	3.2	155	29	7.0	5.6	276	29	6.4	4.8	264	30	5.9	4.7	272	30	5.8	3.1	336				
2.1 " . . .	29	2.7	1.1	141	29	3.6	0.4	248	28	7.9	7.1	282	25	7.1	6.5	273	29	7.8	7.3	272	30	5.9	4.4	294				
3.0 " . . .	28	3.8	0.3	043	28	4.8	3.5	206	28	10.8	10.0	287	14	7.3	6.3	271	26	10.7	10.2	281	30	7.6	5.6	267				
3.6 " . . .	27	4.7	0.9	351	20	5.6	4.1	348	22	11.6	10.0	289					24	12.0	11.2	282	27	9.1	6.7	258				
4.5 " . . .	24	6.4	4.8	296	2	6.0	5.7	292	14	11.3	9.3	292					21	13.1	11.9	283	21	10.0	7.2	271				
5.4 " . . .	18	9.0	8.5	288					8	11.4	9.0	303					14	12.3	11.1	288	15	11.6	8.6	275				
6.0 " . . .	16	9.6	8.2	285					3	5.0	0.6	283					10	11.9	10.1	293	13	13.0	9.4	283				
7.2 " . . .	11	11.6	10.7	279					3	3.7	1.6	325					4	9.5	8.9	285	9	13.5	10.2	285				
9.0 " . . .	4	13.9	13.5	280					1	19.5	19.5	280					2	23.3	23.0	266	2	8.7	6.9	330				

Station	BHOPAL/BAIRAGARH								BHUBANESHWAR																			
	1730				2330				0530				1130				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	4.1	2.7	272	30	3.2	1.3	315	30	3.3	2.7	210	30	3.8	2.9	217	30	6.5	5.6	181	30	5.7	4.9	216				
0.15 a.g. . .	30	6.9	5.0	271	30	8.0	4.1	328	26	7.3	4.5	210	30	4.7	3.7	219	30	8.8	7.6	188	29	8.4	7.9	209				
0.3 a.m.s.l. .									26	7.6	6.0	230	30	4.7	3.7	221	30	8.5	7.8	192	29	8.6	8.2	215				
0.6 " . . .	30	6.1	4.3	274	30	7.4	3.7	331	25	7.2	5.6	236	30	4.8	3.6	237	30	7.2	6.1	198	28	8.9	7.9	218				
0.9 " . . .	30	6.6	5.1	274	30	7.4	4.4	322	25	7.3	6.0	238	30	5.7	4.5	253	30	5.2	5.9	218	28	7.5	6.3	219				
1.5 " . . .	30	5.9	4.7	269	30	6.0	4.8	305	25	5.4	4.3	256	29	5.0	4.2	276	30	3.6	2.1	268	27	4.2	3.3	202				
2.1 " . . .	28	6.5	5.4	271	30	5.4	4.2	286	23	5.1	4.1	275	19	3.7	2.6	285	29	4.4	3.3	305	24	3.9	3.0	267				
3.0 " . . .	27	7.0	6.0	266	29	6.8	5.5	263	22	5.5	4.1	295	8	3.9	3.0	287	21	6.1	4.6	302	22	5.0	3.8	284				
3.6 " . . .	23	7.5	6.4	266	8	6.3	3.9	275	18	6.2	4.5	300					15	7.6	6.2	309								
4.5 " . . .	14	7.9	6.1	281	1	4.0	4.0	025	9	6.8	5.1	310					5	9.3	8.2	271								
5.4 " . . .	9	8.4	6.1	333					6	8.3	8.0	272					2	11.7	11.7	300								
6.0 " . . .	7	7.9	6.9	340					5	10.1	9.6	285					2	11.7	11.5	277								
7.2 " . . .	4	9.0	7.3	350					3	13.0	12.3	275																
9.0 " . . .	1	22.5	22.5	345					1	19.0	19.0	285																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Station	BHUIJ/RUDRAMATA												BIKANER															
	0530				1730				2330				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.5	1.2	275	30	5.0	3.8	270	30	3.7	3.4	269	30	1.5	0.3	254	30	1.6	0.8	276	30	1.6	0.4	270				
0.15 a.g.	30	6.5	5.3	288	30	5.8	4.0	264	30	7.1	6.4	269	30	7.8	1.7	102	30	4.3	2.5	282	30	8.1	2.3	030				
0.3 a.m.s.l.	30	7.5	6.3	298	30	5.8	3.9	262	30	7.9	7.0	274	30	6.1	1.4	108	30	4.0	2.4	283	30	6.5	2.3	039				
0.6 "	30	9.1	7.7	305	30	6.2	4.4	267	30	7.8	6.5	281	30	7.7	1.1	243	30	4.7	3.1	285	30	8.5	2.3	032				
0.9 "	30	7.3	5.7	305	30	5.9	3.9	267	30	6.6	5.0	288	29	6.2	1.4	235	30	5.2	3.8	274	30	7.4	1.6	018				
1.5 "	29	5.8	3.3	265	30	5.0	3.1	273	30	4.7	2.6	281	29	5.7	3.7	270	29	5.8	4.0	272	29	5.0	1.9	282				
2.1 "	29	6.5	3.0	249	29	5.1	2.9	268	30	5.3	2.0	268	27	5.6	4.7	284	26	5.7	4.0	262	26	3.5	2.7	266				
3.0 "	27	5.9	3.3	240	28	6.2	3.8	248	30	7.0	3.1	230	23	8.2	6.6	300	24	6.4	4.0	265	21	6.7	5.0	263				
3.6 "	17	6.1	3.6	238	28	7.5	5.1	249	23	7.0	3.0	240	12	8.0	6.6	302	22	6.8	4.7	272	10	8.9	6.4	290				
4.5 "	11	6.5	3.9	260	26	8.5	5.5	252	13	6.5	3.7	287	2	9.7	9.7	267	20	8.0	5.8	274	1	16.5	16.5	295				
5.4 "	8	6.6	4.3	255	25	10.4	7.4	269	7	7.1	5.2	269	2	16.3	16.1	257	17	10.7	7.1	274								
6.0 "	6	9.3	7.7	253	23	11.3	8.4	275	4	5.9	4.6	265	2	15.7	15.3	265	14	11.9	9.0	272								
7.2 "	5	11.6	10.4	250	19	13.4	11.7	269									3	16.5	16.1	244								
9.0 "	3	13.0	12.8	270	6	24.2	23.1	270																				

Station	BOMBAY/SANTACRUZ												CALCUTTA/DUMDUM															
	0530*				1130				1730*				2330				0530*				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.7	0.3	006	30	1.7	1.4	280	29	5.9	5.6	306	30	1.2	0.7	306	30	1.7	1.3	185	30	1.6	1.1	191				
0.15 a.g.	30	3.6	2.5	002	30	3.4	2.5	292	29	7.9	7.5	316	29	4.6	3.3	311	30	6.0	4.3	207	30	4.0	2.6	208				
0.3 a.m.s.l.	30	3.7	2.6	361	30	3.3	2.0	315	29	7.2	6.6	317	29	5.2	4.0	314	30	5.9	4.5	217	30	4.4	2.9	209				
0.6 "	30	3.8	2.6	350	30	3.3	2.2	009	29	5.9	5.4	318	29	5.3	4.1	315	30	5.9	4.5	228	30	4.5	3.2	227				
0.9 "	30	4.5	3.4	327	30	4.3	3.1	021	29	5.1	4.5	317	29	4.7	3.4	319	30	5.6	4.1	239	30	4.7	3.7	235				
1.5 "	30	4.1	3.0	339	30	4.3	2.5	334	29	3.5	1.7	317	29	3.7	2.2	310	30	6.0	4.7	254	29	5.7	4.3	254				
2.1 "	30	4.7	3.1	247	30	4.6	1.7	240	29	3.7	1.6	261	29	4.7	2.2	246	30	6.9	5.7	277	28	6.2	5.5	270				
3.0 "	29	5.6	1.8	205	30	5.8	3.9	196	29	5.7	3.5	215	28	6.7	3.4	183	30	8.7	6.9	283	24	7.1	6.2	275				
3.6 "	29	6.4	3.9	205	28	6.4	4.7	206	29	6.4	3.2	214	24	7.3	4.8	211	30	9.8	8.0	283	23	8.2	6.7	283				
4.5 "	29	6.1	4.5	251	27	6.5	4.6	258	29	7.0	4.5	243	17	5.8	3.3	250	30	10.9	9.4	279	19	9.7	8.0	280				
5.4 "	29	7.8	6.0	279	26	8.8	7.6	275	29	8.1	6.4	273	6	7.8	6.5	287	30	11.4	9.9	264	14	12.1	11.0	269				
6.0 "	29	9.1	6.9	289	25	11.2	9.4	277	29	10.0	8.6	280	6	10.5	8.7	277	30	13.0	11.3	259	11	13.3	9.9	270				
7.2 "	29	12.8	11.8	283	23	15.1	13.9	272	29	13.4	12.3	280					30	16.1	15.0	262	5	15.8	14.7	268				
9.0 "	26	17.5	16.5	285	20	20.7	19.6	276	26	19.2	18.1	285					29	21.6	20.2	257	2	13.7	10.9	267				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Station	CALCUTTA/DUMDUM								COCHIN/ WILLINGDON†												DARJEELING							
	1730*				2330				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.6	2.5	183	30	2.3	1.4	149	30	0.6	0.4	049	30	3.9	2.7	272	30	1.1	0.6	107	30	0.2	0.1	242				
0.15 a.g.	30	5.9	5.4	191	30	8.4	5.3	173	29	3.0	2.1	066	29	4.7	3.6	275	28	2.7	0.4	051	8	2.3	1.5	250				
0.3 a.m.s.l.	30	5.8	5.1	193	30	8.6	5.5	185	29	2.5	1.6	038	29	5.3	3.5	254	28	2.6	0.6	275								
0.6 "	30	5.7	4.6	186	29	7.2	4.9	194	29	2.5	1.5	001	29	4.4	3.3	267	28	2.9	1.7	288								
0.9 "	30	5.4	4.2	205	29	6.2	4.2	215	29	2.4	1.5	323	29	2.9	1.5	261	28	2.5	0.9	294								
1.5 "	30	4.8	3.7	248	29	6.0	5.1	250	29	2.4	1.0	013	28	3.3	2.7	067	25	3.4	2.1	087								
2.1 "	30	5.9	4.7	281	27	7.1	6.0	269	27	4.4	3.7	054	24	6.2	5.4	066	20	5.1	4.8	085								
3.0 "	30	7.9	6.9	287	21	8.3	6.8	279	22	5.8	5.3	066	14	6.9	3.3	325	11	5.6	4.7	065	8	7.7	7.6	270				
3.6 "	30	9.4	8.0	288	7	9.4	7.9	296	16	4.1	2.6	057	12	6.5	4.7	056	5	4.1	2.9	066	7	9.2	9.2	238				
4.5 "	30	10.6	9.2	281	1	1.5	1.5	255	5	3.0	2.1	257	8	4.6	2.0	298	2	4.5	3.4	074	4	13.4	13.3	273				
5.4 "	30	12.3	10.9	272					2	2.5	1.5	200	2	5.7	2.7	013					1	10.0	10.0	260				
6.0 "	30	13.1	11.8	273					1	4.0	4.0	180	1	7.5	7.5	040												
7.2 "	30	16.6	15.4	267																								
9.0 "	28	24.2	22.6	261																								

Station	DARJEELING				DEHRADUN								DIBRUGARH/MOHANBARI															
	1730				0530				1730				0530				1130				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.4	1.3	221	30	0.6	0.5	023	30	1.1	0.5	284	30	1.4	1.3	049	30	1.1	0.7	052	30	1.1	0.7	039				
0.15 a.g.	6	6.3	6.3	227	30	1.7	1.2	067	30	3.4	1.9	272	26	5.2	4.7	052	27	3.4	2.5	048	29	4.6	2.5	036				
0.3 a.m.s.l.													26	5.4	4.8	050	27	3.4	2.4	047	29	5.0	3.7	046				
0.6 "													26	4.8	4.4	058	27	3.3	2.3	067	28	4.5	2.9	064				
0.9 "					30	1.6	1.0	065	30	3.4	2.2	288	26	3.8	3.2	075	27	3.1	1.5	088	28	4.0	1.6	089				
1.5 "					30	2.9	0.5	130	30	3.4	2.5	272	24	2.6	1.3	145	27	3.7	2.0	202	26	4.0	2.3	233				
2.1 "					30	3.3	1.6	300	30	3.6	2.8	273	22	3.8	3.3	239	23	5.1	4.1	219	23	6.5	6.4	230				
3.0 "	6	9.0	8.6	263	30	5.9	4.3	290	26	4.9	3.5	292	19	6.6	6.1	250	14	8.3	8.0	245	18	8.8	8.2	247				
3.6 "	6	9.3	9.0	287	27	6.2	5.1	280	24	5.6	3.3	290	11	7.7	7.4	259	10	9.5	9.0	245	13	9.6	9.0	237				
4.5 "	5	12.8	12.5	274	4	4.5	1.7	310	20	7.1	5.6	284	7	9.3	9.0	251	4	8.8	7.1	304	8	9.1	8.1	233				
5.4 "	3	14.3	14.3	275	1	11.0	11.0	255	14	10.3	8.8	274					4	9.7	6.7	299	4	7.0	6.9	239				
6.0 "	3	12.0	11.8	282					11	11.4	10.4	273					4	12.5	8.4	317	3	9.0	7.8	274				
7.2 "	2	11.7	10.0	295					9	12.9	10.4	280					2	7.0	6.8	316								
8.0 "									3	15.5	13.7	285																

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 km. above mean sea level

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Ht in Km.	n	V	v	D
	VISHAKHAPATNAM			
	1730 hrs.			
10.5	26	28.3	27.3	263
12.0	26	36.0	32.5	265
14.1	23	33.7	26.1	261
16.2	15	18.0	16.9	265
18.0	10	10.5	5.5	303
21.0	2	10.3	1.3	152
24.0	2	13.0	11.6	140

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 14 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

Serial No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	Ahmadabad	Fan type	20th July, 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
10	New Delhi /Safdarjung	Clock type	3rd December, 1943	00 and 12	
11	Port Blair	Fan type	4th December, 1949	00 and 12	
12	Srinagar	Clock type	1st August, 1962	00 and 12	
13	Trivandrum	Fan type	1st July, 1947	00 and 12	
14	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 hr. G.M.T.

April, 1963 (Chaitra 11—Vaisakha 10, 1885 Saka)

Standard Pressure Surface mb.	TRIVANDRUM Surf. Pr. (1000 mb.)						VISHAKHAPATNAM (1003 mb.)					
	No. of obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	30	064	303.2	305	300	297.0	30	041	302.5	304	301	297.6
1000	30	062	..	..	..	..	30	065	..	..	..	..
900	30	995	295.3	298	292	291.6	29	998	297.6	300	293	287.3
850	30	1491	292.0	296	287	288.7	29	1499	295.0	299	292	282.9
800	30	2006	289.1	293	283	285.0	29	2023	291.2	295	289	279.1
700	29	3135	283.4	289	278	275.3	29	3154	285.6	287	279	275.7
600	29	4402	276.3	280	273	266.8	29	4410	273.3	277	270	269.9
500	29	5858	268.4	271	264	..	28	5853	264.9	271	261	..
400	29	7579	257.7	267	250	..	28	7553	254.0	259	249	..
300	26	9696	242.8	246	238	..	26	9637	239.5	245	235	..
250	26	10964	232.5	236	228	..	26	10890	230.3	237	225	..
200	24	12446	222.3	227	214	..	26	12367	221.2	229	216	..
175	23	13284	213.6	219	206	..	25	13215	216.2	225	209	..
150	23	14251	206.8	211	197	..	25	14222	210.1	219	204	..
125	19	15331	200.9	207	187	..	23	15275	204.9	209	197	..
100	17	16680	198.1	207	189	..	22	16605	200.4	204	189	..
80	10	18011	198.1	203	194	..	17	17891	199.6	206	185	..
70	9	18795	198.4	203	194	..	16	18685	201.7	212	185	..
60	8	19693	201.7	208	197	..	12	19611	204.3	215	187	..
50	5	20796	206.2	215	197	..	8	20630	205.8	219	189	..
40												
30												
20												
10												

NOTE.—Numbers of observations refer to those of dynamic height. Means are not worked out for temperature and dew point for the 1000 mb. Surface and for dew point for standard pressure surfaces with temperature less than 273°A.

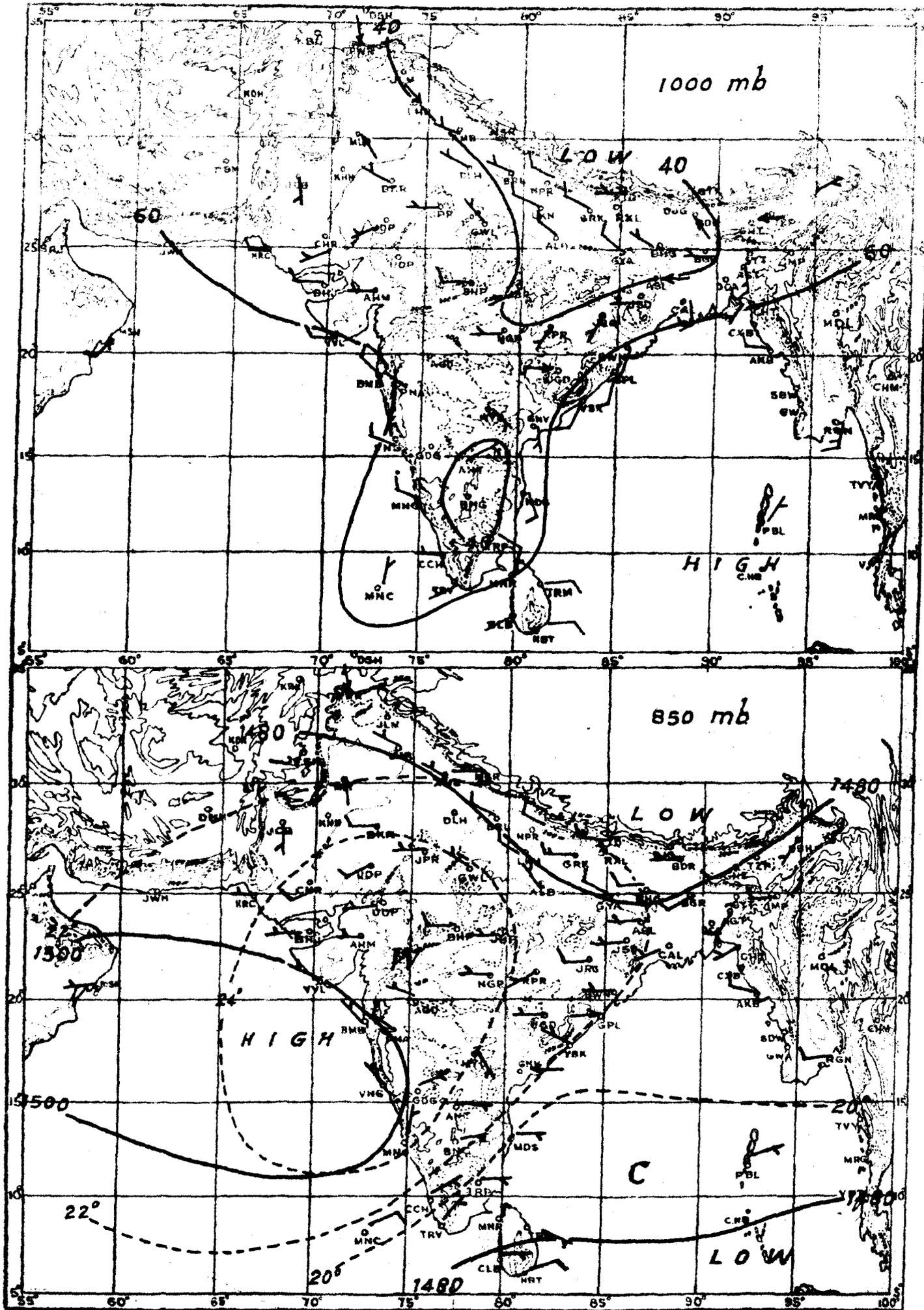
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

APRIL 1963

1 Mei D

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

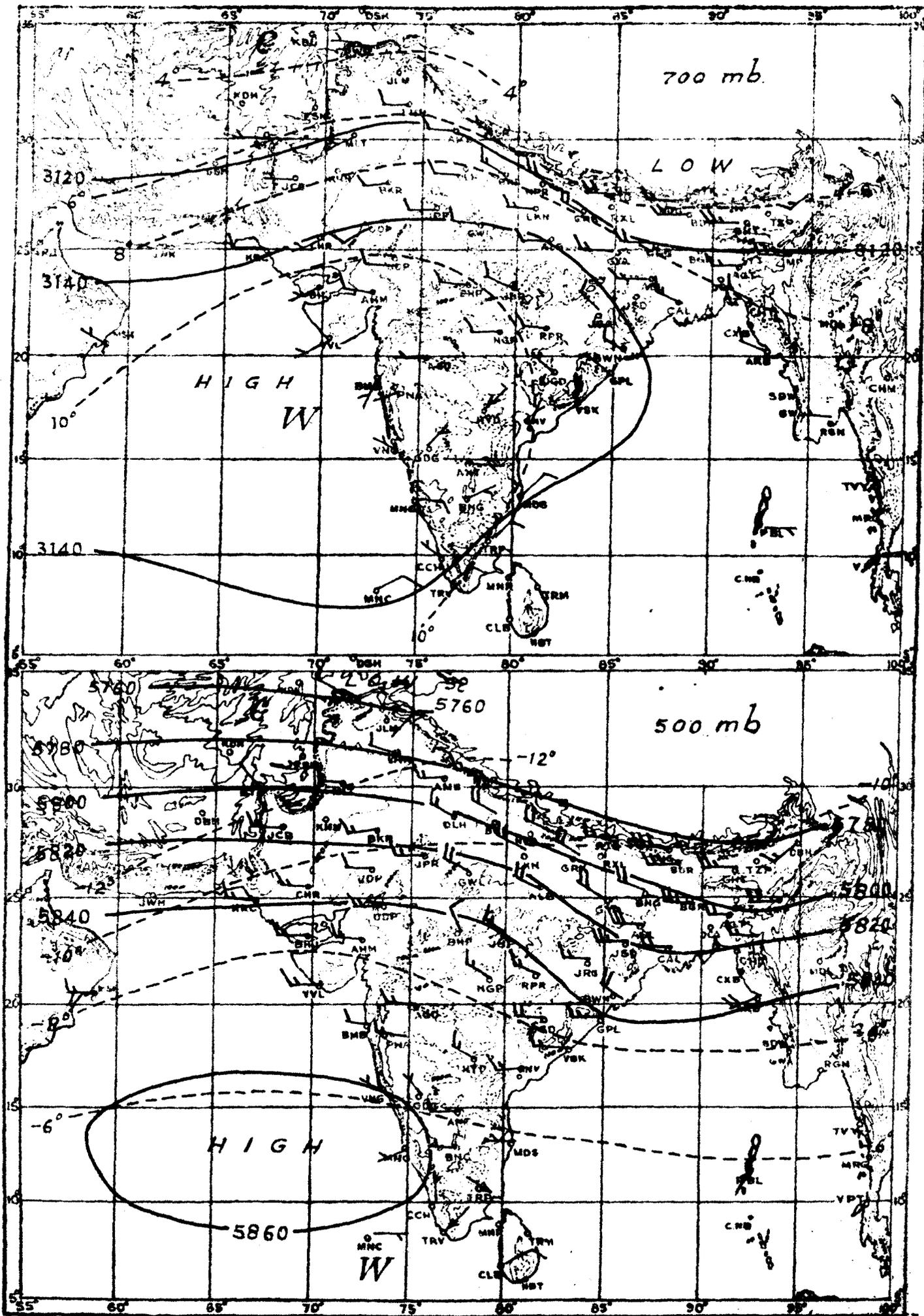
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

L.Met.D

APRIL 1963

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

MAY

Published by authority of the Government of India

Chief features :

- (i) Movement of severe western disturbances across the north of the country causing good rainfall in northwest India;
- (ii) Well marked seasonal thundershower activity in the Peninsula and northeast India;
- (iii) Formation and movement of two severe cyclonic storms, one in the Arabian Sea and the other in the Bay of Bengal;
- (iv) Mild summer conditions generally over the entire country; and
- (v) On set of the southwest monsoon in the extreme south Kerala on the last day of the month.

Seven western disturbances moved across the north of the country during the month. They were generally feeble except the third and the fourth disturbances which affected northwest India during the second week. The first six western disturbances moved in quick succession during the first three weeks and the last one towards the end of the month. Local or scattered precipitation occurred in most parts of northwest India and Uttar Pradesh in association with the first five disturbances. The last two disturbances moved across the extreme north of the country as upper air troughs and caused only a few light showers there. The details regarding the movement and activity of the various western disturbances are given in the accompanying statement. (Please see table attached.)

The seasonal thundershower activity continued to be good in northeast India. Some of the heavy rainfalls recorded were : Contai 7 cm on 3rd, Darjeeling 9 cm and Goalpara 7 cm on 4th, Jalpaiguri 8 cm on 12th, Cherrapunji 9 cm and Goalpara 7 cm on 16th, Kailashahar 7 cm on 17th, Pasighat 10 cm on 18th and North Lakhimpur 7 cm on 22nd.

There were spells of good thunderstorm activity over the Peninsula and central parts of the country also. Belgaum recorded 7 cm of rain on 4th, Minicoy 5 cm on 5th and Bangalore (F.O.) 7 cm on 6th. The seasonal trough of low pressure over the Peninsula and central parts of the country became active from 12th onwards leading to considerable influx of moist air and marked thundershower activity. While the activity decreased considerably in the central parts and in the north Peninsula after 19th, it increased markedly in the south Peninsula, consequent on the following developments in the southeast Arabian Sea.

A well marked low pressure area moved into the southeast Arabian Sea and concentrated into a depression by the morning of 18th, with its centre near Lat. 8°N and Long. 68.5°E . Moving northwards, it intensified into a cyclonic storm of small extent by the morning of 20th, with centre near Lat. 10°N and Long. 68.5°E , and into a severe cyclonic storm with a very small core of hurricane winds by the same evening. The storm which was of small extent on 22nd intensified further and also grew considerably in extent by 24th. It crossed into Arabia near Lat. 18°N Long. 73°E on the night of 26th. Special observations recorded by the two U.S. Research aircraft which flew into the cyclonic storm on 22nd and 24th gave the following details.

Features	On 22.6.63	On 24.6.63
Position of centre.	$11.5^{\circ}\text{N}/65.9^{\circ}\text{E}$ (at 0800 Z)	$14.8^{\circ}\text{N}/60.1^{\circ}\text{E}$ (at 0813 Z)
Central pressure	984 mbs	947 mbs
Highest winds	60 kts. (in south quadrant)	104 kts. (in west walls)

In association with the storm there was good thundershower activity in Kerala and coastal Mysore on a number of days. Mangalore recorded 8 cm of rain on 19th, Calicut 7 cm on 21st, Trivandrum 6 cm on 24th, Calicut 14 cm and Karwar 6 cm on 25th and Mangalore 6 cm on 27th.

A well marked low pressure area developed over the southeast Bay of Bengal on 23rd. Moving northwards, it intensified into a depression by the morning of 24th with centre near Lat. 9°N and Long. 90°E . Continuing to move northwards the depression progressively intensified into a cyclonic storm of small extent by 25th morning with centre

near Lat. 12°N and Long. 90°E and into a severe cyclonic storm with a core of hurricane winds by the evening of 27th with centre near Lat. $17^{\circ}5'\text{N}$ and Long. $91^{\circ}0'\text{E}$. Moving rapidly, the storm crossed the coast near Chittagong during the night of the 28th. Thereafter, it weakened rapidly and broke up over Assam Himalayas by 31st. Under its influence the southwest monsoon current advanced into the extreme south Bay and also into the east central Bay of Bengal. Heavy to very heavy rains also occurred at a number of places in the Bay Islands and Assam. Kondul recorded 14 cm of rain on 24, Mayabandar 10 cm on 25th, Port Blair 9 cm on 28th, Majbat, Rangiya, Cherrapunji and Shillong 10 cm each and Pasighat 9 cm on 30th and Cherrapunji 8 cm on 31st. According to press reports, the Brahmaputra with all its tributaries rose in spate following heavy rains in the upper reaches and an all-weather bridge over the Dikrong river was washed away by flood waters.

An upper air trough developed over the southwest Bay of Bengal on 28th. It moved slowly northwestwards and lay over the south Peninsula on 31st as an upper air low between 3.0 and 6.0 kms a.s.l. Under its influence, the southwest monsoon advanced into the extreme south Kerala on 31st which is about the normal date. Alleppey recorded 8 cm of rain on that day.

Day temperatures were either below normal or normal over most parts of the country during the major part of the month. They were appreciably to markedly below normal in northeast India on a number of days during the first week and in northwest India and central parts of the country during the second week. The maximum temperatures recorded at a number of stations in the central parts of the country on 16th were as much as about 10°C below normal. Day temperatures, however, remained generally above normal in the Peninsula and central parts of the country from 20th till the end of the month, being appreciably so in Gujarat Region on 23rd and 24th. Temperatures were also above normal in northwest India during the last week.

Rainfall for the month was in large excess in Bihar Plains and north Interior Mysore in moderate excess in Sub-Himalayan West Bengal, Orissa, east Uttar Pradesh, east Madhya Pradesh, Vidarbha and the Arabian Sea Islands, in slight excess in Bihar Plateau and the Punjab(I) and normal in Gangetic West Bengal, west Rajasthan and south Interior Mysore. It was in slight defect in Assam, Rayalaseema and Kerala and in moderate defect in the Bay Islands, west Uttar Pradesh, Madhya Maharashtra, the Madras State and coastal Mysore and in large defect over the rest of the country outside Himachal Pradesh.

Mean maximum temperature was above normal in the Bay Islands and below normal in West Bengal, Orissa, Bihar State, east Uttar Pradesh and the Punjab(I). It was normal over the rest of the country outside Himachal Pradesh. Mean minimum temperature was above normal in Jammu and Kashmir and below normal in Orissa, Bihar Plateau, east Uttar Pradesh, the Punjab(I), east Madhya Pradesh and Vidarbha. It was normal over the rest of the country outside Himachal Pradesh.

Mean relative humidity in the morning was above normal in Bihar Plains, east Uttar Pradesh, the Punjab(I) and east Madhya Pradesh and below normal in the Bay Islands, east Rajasthan and Gujarat Region. It was normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was above normal in Sub-Himalayan West Bengal, the Punjab(I), east Rajasthan, west Madhya Pradesh, the Madras State, north Interior Mysore and the Arabian Sea Islands and below normal in west Uttar Pradesh, Gujarat Region and Rayalaseema. It was normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I.S.T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. IST. of the date given in the succeeding column.

Poona 5;
The 16th February 1963

R. ANANTHAKRISHNAN,
for Director General of Observatories.

ment showing the movement and activity of western disturbances during the Month of May 1963

S.No.	Period	Course	Region affected	Nature of precipitation	Period	Remarks
1.	2nd - 6th	North Baluchistan and adjoining Afghanistan-West Pakistan-West Himalayas.	Jammu and Kashmir. Punjab (I) West Uttar Pradesh.	Scattered rain. Scattered rain. Scattered rain.	5th, 6th 4th-6th 6th, 7th	Feeble
2.	5th - 8th	North Baluchistan and adjoining Afghanistan-West Pakistan-Western Himalayas.	West Rajasthan. East Rajasthan. Jammu and Kashmir. Punjab (I). Himachal Pradesh. West Uttar Pradesh.	Scattered rain. Scattered rain. Scattered/Local rain. Local rain. Fairly widespread rain. Scattered/Local rain.	7th 8th 8th, 9th 8th, 9th 8th, 9th 8th, 9th	Feeble upper air trough.
3.	7th - 13th	Afghanistan and adjoining West Pakistan-Rajasthan-Madhya Pradesh-Assam.	West Rajasthan. East Rajasthan. Punjab (I). West Uttar Pradesh.	Scattered rain. Scattered rain. Scattered rain. Local/Scattered rain.	9th and 11th 11th 11th, 12th 11th, 12th	As sea level low.
4.	12th - 15th	West Baluchistan and adjoining Afghanistan-Northern divisions of West Pakistan-Punjab (I)-Western Himalayas.	West Rajasthan. Jammu and Kashmir. Punjab (I). West Uttar Pradesh.	Scattered rain. Local rain. Scattered/Local rain. Scattered rain.	14th, 15th 13th, 15th 13th, 15th 14th, 15th	As sea level low.
5.	14th - 17th	Baluchistan-West Pakistan-Punjab-Western Himalayas.	Rajasthan. Jammu and Kashmir. Punjab (I). West Uttar Pradesh.	Scattered rain. Local rain. Local/Scattered rain. Scattered rain.	16th 16th 16th, 17th 16th-18th	As upper air trough.
6.	18th - 22nd	North Afghanistan-Jammu and Kashmir.	Jammu and Kashmir. Himachal Pradesh.	Scattered/Local rain. Local rain.	19th-21st 21st	Feeble disturbance as high level trough.
7.	27th - 30th	West Pakistan and adjoining Afghanistan-Punjab-Hills of West Uttar Pradesh.	Jammu and Kashmir. West Uttar Pradesh.	Scattered rain. Scattered rain.	28th 28th, 29th	

MONTHLY MEANS OF UPPER WINDS

May, 1963 (Vaisakha 11-Jyaistha 10, 1885 Saka)

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 40 stations all the observations were taken by means of pilot balloons and at 14 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their coordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk(*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n—represents the number of observations;

V—represents the mean wind speed in metres per second irrespective of direction;

v—represents the resultant mean velocity in metres per second;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0, and 36.0 km. a.m.s.l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N.	Long. E.	Height of Anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)
1.	Agartala	23°53'	91°15'	17	28th November, 1951	0530 1130 1730 2330
2.	Almadabad	23°04'	72°38'	61	19th May, 1928	0530* 1130 1730* 2330
3.	Allahabad/Bamhrauli	25°27'	81°44'	103	28th February, 1930	0530* 1130 1730* 2330
4.	Ambala	30°23'	76°46'	279	1st April, 1941	0530 1130 1730 2330
5.	Anantapur	14°41'	77°37'	365	12th February, 1946	0530 1730 2330
6.	Asansol	23°41'	86°59'	135	29th May, 1942	0530 1130 1730 2330
7.	Aurangabad/Chikalthan	19°51'	75°24'	583	7th October, 1951	0530 1730 2330
8.	Bairaich	27°34'	81°36'	134	1st October, 1961	0530 1130 1730
9.	Bangalore	12°58'	77°35'	936	19th May, 1915	0530@ 1130 1730@ 2330
10.	Bareilly	28°22'	79°24'	181	12th January, 1943	0530 1730
11.	Bareilly	17°22'	78°28'	543	1st September, 1929	0530 1730 2330
12.	Bangalpur	25°14'	86°57'	61	19th May, 1950	0530 1130 1730
13.	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943	0530 1730 2330
14.	Bhubaneswar	20°15'	85°50'	54	5th December, 1942	0530 1130 1730 2330
15.	Bijij/Ra'ramata	23°15'	69°48'	90	14th September, 1937	0530 1730 2330
16.	Bikaner	28°00'	73°18'	229	18th October, 1946	0530 1730 2330
17.	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933	0530* 1130 1730* 2330
18.	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921	0530* 1130 1730* 2330
19.	Cochin, Willingdon†	09°56'	76°14'	13	16th March, 1942	0530 1730 2330
20.	Darjeeling	27°03'	88°16'	2115	21st May, 1956	0530 1730
21.	Dehra Dun	30°19'	78°03'	692	1st October, 1958	0530 1730
22.	Dibrugarh/Mohaubari	27°29'	95°01'	112	1st June, 1948	0530 1130 1730 2330
23.	Goa	15°25'	75°38'	650	3rd May, 1943	0530 1730 2330
24.	Ganpati	26°05'	91°43'	55	12th March, 1955	0530* 1130 1730* 2330
25.	Gaya	24°45'	84°57'	119	19th March, 1937	0530 1130 1730 2330
26.	Gopalpur	19°16'	84°53'	24	15th February, 1946	0530 1730 2330
27.	Gorakhpur	26°45'	83°22'	83	5th January, 1943	0530 1730
28.	Gwalior	26°14'	78°15'	208	7th May, 1938	0530 1130 1730 2330
29.	Imphal/Tulihal	24°46'	93°54'	782	8th March, 1952	0530 1130 1730 2330
30.	Jabalpur	23°10'	79°57'	402	30th July, 1928	0530 1730 2330
31.	Jagdalpur	19°05'	82°02'	562	25th March, 1948	0530 1730 2330
32.	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953	0530 1730 2330
33.	Jamshedpur	22°49'	86°11'	144	23rd July, 1942	0530 1130 1730
34.	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530 1730 2330
35.	Jodhpur	26°18'	73°01'	229	15th October, 1934	0530* 1130 1730* 2330
36.	Lucknow/Anausi	26°45'	80°53'	133	20th November, 1950	0530 1730 2330
37.	Madra/Minaumbakkam	13°00'	80°11'	29	8th April, 1926	0530* 1130 1730* 2330
38.	Mangalore/Bijpe	12°55'	74°53'	104	25th May, 1959	0530 1730 2330
39.	Minicoy	08°18'	73°00'	15	14th April, 1941	0530 1730 2330
40.	Nagpur/Sonegaon	21°06'	79°03'	316	23rd April, 1943	0530* 1130 1730* 2330
41.	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936	0530* 1130 1730* 2330
42.	Poona	18°32'	73°51'	593	5th January, 1925	0530 1730 2330
43.	Port Blair	11°40'	92°43'	95	29th October, 1945	0530* 1130 1730* 2330
44.	Raipur	21°14'	81°39'	308	15th July, 1944	0530 1130 1730 2330
45.	Raxaul	26°59'	84°51'	83	28th October, 1957	0530 1130 1730
46.	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530 1730 2330
47.	Srinagar	34°06'	74°48'	1603	1st August, 1962	0530* 1730*
48.	Tiruchirappalli	10°46'	78°43'	96	22nd June, 1936	0530 1730 2330
49.	Trivandrum	08°29'	76°57'	73	8th December, 1928	0530* 1130 1730* 2330
50.	Udaipur	24°35'	73°42'	587	24th June, 1947	0530 1730 2330
51.	Vengurla	15°52'	73°38'	8	22nd November, 1941	0530 1730 2330
52.	Veraval	20°54'	70°22'	17	13th October, 1941	0530 1730 2330
53.	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942	0530 1730 2330
54.	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928	0530* 1130 1730* 2330

*Radio wind ascents.
 @Radiosonde ascents followed by optical theodolite.
 †Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9·0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaistha 10, 1885 Saka)

Station	AURANGABAD/CHIKALTHAN								BAHRAICH								BANGALORE							
	1730				2330				0530				1130				1730				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	4·0	3·2	310	31	4·8	3·3	302	31	1·2	1·1	102	31	1·9	0·9	102	31	1·2	0·5	250	30	2·2	1·9	261
0·15 a. g. . .	31	5·2	3·9	308	31	8·5	5·8	305	30	7·5	5·3	094	31	4·5	2·4	115	31	4·5	2·1	272	29	5·7	3·7	260
0·3 a.m.s.l. . .									30	8·0	4·7	818	31	4·7	2·5	121	31	4·6	2·3	272				
0·6 ,, . . .	31	5·7	4·5	312	31	10·2	7·5	315	30	9·3	3·9	116	31	5·3	2·8	125	31	5·2	2·8	273				
0·9 ,, . . .	31	5·8	4·5	307	31	10·1	8·3	326	30	8·4	2·1	130	31	4·9	1·6	134	31	5·2	2·8	269				
1·5 ,, . . .	31	5·4	4·2	311	31	7·2	4·9	328	30	6·6	3·6	298	31	5·5	3·9	292	31	6·3	5·1	283	29	5·3	3·4	292
2·1 ,, . . .	26	5·3	3·3	296	23	6·9	1·8	331	30	8·3	7·0	305	31	7·7	6·6	298	31	7·8	7·3	292	28	4·2	2·2	018
3·0 ,, . . .	17	6·6	3·3	274	16	5·7	0·2	144	28	11·4	10·2	305	30	10·8	10·3	304	28	10·1	9·5	296	28	6·8	6·0	054
3·6 ,, . . .	8	5·5	3·4	283					27	13·6	13·0	306	29	12·5	11·6	301	28	11·6	11·0	298	26	7·2	6·1	067
4·5 ,, . . .	2	6·0	5·2	292					16	13·3	12·5	295	28	15·0	14·4	298	26	13·5	12·9	299	25	5·5	3·7	062
5·4 ,, . . .	2	6·3	5·1	292					3	12·5	11·8	318	25	15·9	15·2	300	25	14·7	13·8	295	21	5·2	3·2	047
6·0 ,, . . .									2	12·0	10·7	310	24	16·9	16·0	295	24	15·0	14·1	298	18	4·1	1·5	042
7·2 ,, . . .									1	9·0	9·0	240	20	17·3	16·5	292	15	16·6	14·4	296	13	5·8	3·3	002
9·0 ,, . . .													8	21·4	19·8	291	2	21·3	21·3	307	11	7·1	5·0	352

Station	BANGALORE								BAREILLY								BEGAMPET							
	1130				1730@				2330				0530				1730				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2·3	1·6	271	31	2·5	0·2	270	31	3·1	1·3	244	31	1·9	0·6	079	31	1·8	1·3	000	31	2·6	2·0	285
0·15 a.g. . .	31	3·8	3·1	281	31	4·4	0·7	330	28	7·1	3·8	218	31	7·5	0·9	071	30	4·7	3·1	290	31	7·1	5·7	286
0·3 a.m.s.l. . .													31	7·4	0·7	069	30	4·4	3·0	288				
0·6 ,, . . .													31	9·5	0·6	093	30	5·6	4·1	286	31	5·0	3·8	288
0·9 ,, . . .													31	8·4	0·7	315	30	5·8	4·5	291	31	9·2	7·0	295
1·5 ,, . . .	30	3·6	2·7	302	31	4·4	1·4	018	27	6·6	2·9	218	31	6·2	3·5	296	30	6·3	5·7	286	31	8·2	4·6	291
2·1 ,, . . .	28	4·7	2·8	017	31	4·8	2·4	025	28	4·1	0·6	063	31	8·6	7·7	297	29	8·6	8·2	287	31	5·3	2·1	311
3·0 ,, . . .	19	6·3	5·0	049	29	6·6	5·0	052	26	5·1	4·0	045	26	10·7	6·9	316	29	11·5	11·1	294	30	4·8	3·1	030
3·6 ,, . . .	13	6·5	6·0	070	24	6·3	5·4	075	23	5·5	4·9	062	17	11·2	10·8	302	27	12·7	11·9	298	29	5·9	4·7	043
4·5 ,, . . .	9	5·9	4·8	073	19	4·8	4·0	083	18	5·4	4·7	058	5	12·1	11·6	306	24	13·3	12·7	303	26	5·6	3·2	046
5·4 ,, . . .	5	4·5	3·3	079	15	5·4	4·3	032	5	5·9	4·9	070	3	7·8	6·3	302	18	13·3	12·2	312	19	4·6	0·8	318
6·0 ,, . . .	5	4·4	2·5	083	13	6·0	5·8	088	2	2·7	2·5	064	2	7·5	5·3	276	13	13·7	11·9	240	19	4·9	1·9	289
7·2 ,, . . .	4	4·5	2·0	346	6	8·4	6·6	019					1	8·5	8·5	300	3	11·5	9·0	291	11	6·0	3·7	292
9·0 ,, . . .	1	5·0	5·0	120	5	9·0	6·1	012													7	8·5	8·0	312

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaistha 10, 1885 Saka)

Station	BEGAMPET								BHAGALPUR								BHOPAL/BAIRAGARH							
	1730				2330				0530				1130				1730				0530			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.9	1.1	333	31	2.2	1.1	183	31	2.9	1.9	102	31	3.1	1.7	079	31	2.2	1.5	068	31	3.3	2.1	278
0.15 a.g.	31	4.2	1.2	357	31	5.5	3.3	170	31	7.0	4.7	106	31	5.5	3.2	283	29	5.2	3.3	067	31	10.5	6.4	289
0.3 a.m.s.l.									31	7.7	4.4	116	31	5.4	3.4	282	29	5.4	3.5	067				
0.6 "	31	4.2	1.1	004	31	4.2	2.5	181	31	7.3	2.7	155	30	5.3	3.3	092	29	4.7	2.2	076	31	8.8	5.3	280
0.9 "	31	4.1	1.2	356	31	5.9	3.1	166	28	7.1	2.0	186	26	4.9	1.9	115	29	4.3	0.9	096	31	10.7	7.4	316
1.5 "	31	3.9	1.3	005	31	4.3	1.5	186	25	5.7	2.4	260	20	5.8	3.0	258	29	6.0	4.0	275	31	8.5	6.7	320
2.1 "	31	4.1	1.7	012	31	4.0	1.3	340	25	6.8	4.4	286	13	6.8	5.2	288	29	8.7	7.7	287	31	6.9	5.3	317
3.0 "	29	3.8	2.0	358	30	5.1	3.7	343	23	11.1	9.7	256	10	8.0	7.6	290	29	11.6	11.1	290	27	5.8	3.9	266
3.6 "	28	4.4	2.5	345	21	5.9	4.8	345	18	12.3	11.2	295					29	12.4	11.7	290	27	7.1	5.4	262
4.5 "	23	5.2	3.0	336	6	5.5	3.8	350	12	14.4	13.4	391					25	12.2	11.5	293	19	9.2	7.9	266
5.4 "	20	5.9	4.6	321	4	3.9	3.5	071	6	12.6	10.7	299					19	11.2	10.4	291	15	10.5	8.9	291
6.0 "	14	6.6	4.6	328	2	3.0	2.6	045	4	11.1	6.5	273					15	11.4	10.1	291	13	10.4	8.9	305
7.2 "	12	7.3	5.3	306					3	12.0	7.8	237					11	13.1	12.0	296	8	12.1	11.7	312
9.0 "	2	6.7	5.5	281					1	16.0	16.0	265					8	17.0	13.7	287	4	13.9	13.6	296

Station	BHOPAL/BAIRAGARH								BHUBANESHWAR															
	1730				2330				0530				1130				1730				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.0	3.4	281	31	3.9	2.8	296	31	4.8	3.3	202	31	5.5	4.2	200	31	6.9	5.2	182	31	6.2	3.7	190
0.15 a.g.	31	5.7	4.9	291	31	10.9	8.5	303	20	7.3	5.6	214	31	6.8	5.8	205	31	8.3	6.8	260	29	9.1	6.8	191
0.3 a.m.s.l.									20	8.3	6.7	220	31	6.3	5.4	210	31	7.8	6.2	256	29	9.7	7.7	194
0.6 "	31	5.4	4.5	289	31	10.0	7.6	298	20	8.2	6.5	217	31	6.0	4.9	219	31	7.3	5.5	202	28	10.1	7.9	198
0.9 "	31	6.4	5.7	293	31	11.6	9.2	307	19	7.8	5.7	225	29	6.6	5.1	245	30	5.2	3.7	217	25	7.8	6.5	199
1.5 "	31	6.7	6.1	295	31	9.3	7.9	306	16	4.5	2.6	273	24	5.6	4.1	280	28	4.4	3.6	286	22	4.2	2.0	240
2.1 "	31	6.4	5.8	293	31	6.1	5.2	309	16	5.3	3.3	300	13	5.5	4.6	305	23	6.3	5.4	302	17	4.8	3.4	279
3.0 "	28	6.8	6.1	289	26	5.4	3.9	306	12	6.6	5.7	326	7	6.0	4.2	228	21	8.6	6.9	314	16	7.8	6.4	304
3.6 "	22	6.4	5.7	289	5	4.9	3.4	267	9	6.8	5.8	325					16	9.9	8.1	311	1	7.0	7.0	350
4.5 "	20	9.3	8.0	290					2	6.7	6.1	307					8	9.2	7.2	306				
5.4 "	17	10.6	8.6	293					1	7.5	7.5	295					5	6.6	3.6	296				
6.0 "	13	12.5	10.0	300													5	7.4	4.1	309				
7.2 "	3	12.5	11.7	291													1	11.5	11.5	310				
9.0 "	1	13.0	13.0	290																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaisiha 10, 1885 Saka)

Station	GOPALPUR												GORAKHPUR								GWALIOR							
	0530				1730				2330				0530				1730				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.8	3.7	204	31	6.2	5.7	195	31	5.2	4.9	202	31	1.7	1.1	061	31	1.4	0.4	293	31	1.3	0.2	083				
0.15 a. g.	30	10.1	8.9	215	30	13.3	12.7	202	31	11.2	10.7	211	31	7.5	4.6	080	31	5.6	1.0	314	31	4.8	0.5	023				
0.3 a.m.s.l.	30	9.2	8.1	216	30	11.7	11.1	205	31	10.5	9.4	214	31	8.4	5.2	095	31	6.0	1.3	302	31	4.0	0.1	103				
0.6 "	28	6.8	5.6	221	30	7.0	6.2	213	31	7.1	5.9	221	31	8.0	4.0	122	31	6.6	2.1	286	31	5.3	0.9	022				
0.9 "	27	5.8	4.5	237	29	4.2	2.7	237	30	5.0	3.8	226	31	7.5	1.8	126	31	6.4	3.1	283	31	5.4	1.7	351				
1.5 "	25	5.1	3.8	290	27	4.3	2.9	295	29	3.8	2.4	266	31	6.7	2.4	293	31	6.9	5.3	287	31	5.8	4.1	321				
2.1 "	25	5.0	4.2	320	25	5.2	3.0	302	22	5.0	3.2	310	31	7.8	6.3	299	29	9.0	8.2	288	30	7.0	6.5	307				
3.0 "	21	6.5	5.0	336	23	6.6	5.1	340	14	7.2	5.6	342	31	11.5	9.5	297	29	11.8	11.1	293	29	9.6	9.0	293				
3.6 "	15	5.9	4.9	344	22	8.1	5.5	338	3	8.3	8.3	330	27	13.4	12.3	297	28	13.5	12.7	300	29	10.6	9.6	286				
4.5 "	10	8.0	6.1	344	19	9.1	7.3	340					17	13.0	11.9	305	27	13.5	12.5	300	27	12.9	11.7	284				
5.4 "	7	7.4	5.0	323	13	8.5	6.4	326					12	13.1	11.2	296	26	13.6	12.6	298	25	14.4	12.7	287				
6.0 "	5	6.2	5.1	240	8	10.6	8.7	333					5	9.5	8.0	323	23	14.0	12.5	299	23	15.2	13.1	287				
7.2 "	4	5.0	4.8	296	5	10.1	6.9	295					4	9.6	6.0	325	20	15.9	13.7	292	20	16.0	14.3	291				
9.0 "	2	5.5	4.9	285	3	11.8	10.0	270					2	7.5	7.0	270	13	18.8	16.4	284	5	21.5	20.6	305				

Station	GWALIOR												IMPHAL/TULIHAI															
	1130				1730				2330				0530				1130				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.8	0.9	317	31	2.7	2.1	321	31	1.4	0.5	351	31	0.8	0.3	070	31	2.1	0.9	296	31	3.6	2.3	305				
0.15 a. g.	31	3.4	1.8	305	31	4.9	3.9	318	31	5.3	2.2	341	23	2.1	0.8	082	30	3.3	1.8	277	28	6.0	4.1	286				
0.3 a. m. s. l.	31	3.2	1.6	302	31	4.4	3.5	319	31	4.4	1.9	021																
0.6 "	31	3.9	2.3	297	31	5.5	4.5	314	31	5.5	2.5	349																
0.9 "	31	4.0	2.5	295	31	5.6	4.7	309	31	5.1	3.2	314	23	2.1	0.8	071	30	3.3	1.8	282	28	5.9	4.0	289				
1.5 "	31	4.4	3.2	290	31	6.1	5.3	299	31	6.0	5.2	294	23	3.7	1.2	281	30	3.6	2.1	246	27	5.5	3.5	255				
2.1 "	31	5.7	4.7	286	31	6.7	5.8	291	30	7.5	6.9	290	22	6.5	4.6	268	24	6.9	4.4	256	23	6.5	4.9	258				
3.0 "																	11	7.5	6.1	279	12	8.4	7.1	279				
3.6 "	29	8.7	7.4	290	29	8.3	7.7	280	30	8.5	7.4	288	14	9.2	7.2	282												
4.5 "	28	10.3	9.1	291	28	9.5	8.5	280	13	9.3	7.9	275	6	6.1	4.8	254	8	9.3	7.1	277	9	8.5	7.7	290				
5.4 "	27	11.9	10.5	289	26	11.7	10.3	284	1	14.0	14.0	235	1	6.0	6.0	240	3	8.0	4.8	287	2	12.5	12.1	294				
6.0 "	27	13.6	12.0	293	25	14.3	12.8	288					1	6.5	6.5	235	1	3.5	3.5	360								
7.2 "	26	14.5	13.0	291	22	15.1	13.9	291									1	7.0	7.0	025								
9.0 "	23	16.8	15.3	287	21	18.3	16.2	293									1	9.0	9.0	360								
	11	21.5	21.1	281	13	21.9	20.5	291									1	11.0	11.0	300								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

May, 1933 (Vaisakha 22—Jyestha 20, 1933 (Saka))

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR											
	1730				0530				1730				2330				0530*				1130			
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.9	1.3	092	31	1.2	0.6	119	31	2.5	0.7	210	31	2.4	1.0	138	31	3.5	2.3	279	31	3.9	2.4	267
0.15 a.g.	30	4.3	1.8	101	31	4.1	2.5	144	31	4.6	1.7	211	31	6.7	3.0	158	31	8.3	4.2	281	31	5.1	4.0	244
0.3 a.m.s.l.	30	4.3	1.7	103	31	5.0	2.2	144	31	4.4	1.6	210	31	5.5	2.5	145	31	7.1	3.8	285	31	4.4	3.9	231
0.6 "	30	4.7	0.8	034	31	5.1	2.9	196	31	4.4	2.0	224	31	6.8	3.1	189	31	9.0	5.0	285	31	5.0	3.7	243
0.9 "	30	4.7	1.1	323	31	6.1	3.5	228	31	4.5	2.6	245	31	6.9	1.7	219	31	8.5	5.6	272	31	5.8	4.0	260
1.5 "	27	5.8	3.8	307	31	7.1	5.2	276	31	5.3	4.0	277	31	5.3	2.8	288	31	7.7	4.9	267	31	6.1	3.7	260
2.1 "	24	7.4	6.0	292	31	6.6	5.6	296	30	6.7	5.6	294	31	5.7	4.7	302	31	6.7	4.9	260	30	6.7	4.3	259
3.0 "	20	10.1	9.3	301	31	8.0	7.0	309	27	8.2	7.4	315	30	7.1	6.6	311	31	7.8	4.6	237	29	7.6	5.1	258
3.6 "	17	12.4	11.6	298	29	10.0	8.8	309	23	9.7	8.7	326	14	9.8	8.8	309	30	8.3	5.5	251	28	8.1	6.1	263
4.5 "	9	13.3	12.8	307	26	11.3	10.6	313	19	10.9	9.4	328					30	9.6	6.5	261	26	8.9	6.8	243
5.4 "	5	13.5	12.5	294	19	11.1	9.9	315	13	11.2	10.5	313					30	12.1	9.3	265	23	9.4	7.9	270
6.0 "	3	14.7	12.8	304	13	11.4	9.9	317	10	12.2	11.1	309					30	13.7	11.4	265	21	12.1	9.8	280
7.2 "					10	12.8	11.5	314	9	13.8	12.6	296					30	17.2	14.1	271	17	15.9	14.9	281
9.0 "					9	12.5	11.1	304	3	10.5	10.3	319					25	24.5	21.5	267	10	19.5	18.4	278

Station	JODHPUR				LUCKNOW/AMAUSI								MADRAS/MINAMBAKKAM											
	1730*				2330				0530				1730				2330				0530*			
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	4.5	3.5	258	31	2.8	1.8	254	31	2.9	1.6	088	31	3.8	1.9	311	31	2.4	1.1	056	31	3.2	2.5	210
0.15 a.g.	29	6.7	4.8	273	31	10.1	6.8	248	31	7.4	2.6	088	30	4.8	2.5	316	31	8.0	2.7	027	31	5.6	4.0	224
0.3 a.m.s.l.	29	5.9	4.1	269	31	8.4	6.0	244	31	7.6	2.7	090	30	5.0	2.5	314	31	8.1	2.7	027	31	6.5	4.8	228
0.6 "	29	7.4	5.3	266	31	7.8	7.2	257	31	8.0	1.1	042	30	5.3	3.2	308	31	8.4	3.0	014	31	7.8	5.5	229
0.9 "	29	7.4	5.9	253	31	9.8	7.3	259	30	6.5	2.1	330	30	5.3	3.3	272	30	7.1	3.4	339	31	6.9	4.6	228
1.5 "	29	6.5	5.4	245	28	7.9	5.4	263	30	6.3	3.9	310	30	6.2	5.6	295	27	7.0	5.8	318	31	3.9	1.1	255
2.1 "	29	6.7	4.8	250	24	6.4	4.5	263	30	8.9	7.3	300	30	8.8	8.4	295	27	9.5	8.7	297	31	4.2	1.8	057
3.0 "	29	6.7	4.8	269	14	5.1	2.2	242	29	11.8	9.8	291	28	11.3	10.6	289	21	10.1	4.8	314	31	5.9	4.0	048
3.6 "	29	7.4	5.2	257	3	3.8	3.5	331	25	13.0	10.9	301	26	13.1	12.2	290	5	13.3	11.1	340	31	6.7	4.5	081
4.5 "	29	9.0	6.2	264					8	15.1	13.1	309	23	13.6	12.9	295					31	6.5	5.5	043
5.4 "	29	11.1	8.1	277					4	15.1	13.3	296	20	16.0	15.5	296					31	6.0	4.6	039
6.0 "	29	11.2	9.3	273					3	14.3	14.2	311									31	3.8	3.6	036
7.2 "	29	15.1	12.2	269									17	16.0	14.5	297					30	5.5	1.2	016
9.0 "	24	22.3	20.8	269									3	19.8	18.8	252					29	7.6	2.4	357

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaishta 10, 1985 Saka)

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE																			
	1130				1730*				2330				0530				1730				2330											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.9	1.2	190	31	6.2	5.5	153	31	4.3	3.9	173	31	1.4	0.8	079	31	4.2	3.6	285	31	1.7	0.6	325								
0.15 a.g.	31	4.7	2.4	205	31	6.3	5.9	150	31	8.2	7.3	176	31	4.0	2.0	031	31	6.1	4.9	290	29	5.2	3.8	320								
0.3 a.m.s.l.	31	4.8	2.9	217	31	5.8	5.1	155	31	9.2	8.1	179	31	4.3	2.2	012	31	6.3	5.7	288	29	5.6	4.4	316								
0.6 „	31	5.0	3.0	220	31	4.7	3.2	180	31	8.6	7.3	186	31	5.3	3.9	326	31	5.5	4.8	296	29	6.0	5.3	318								
0.9 „	31	4.6	2.7	235	31	3.7	1.7	240	31	6.2	4.7	200	30	5.0	3.3	305	31	4.5	3.6	316	29	5.1	4.4	312								
1.5 „	29	4.0	1.0	300	31	3.8	1.4	337	31	3.5	1.2	264	29	4.3	2.4	308	29	4.0	2.5	350	29	4.4	2.9	300								
2.1 „	25	4.4	1.8	030	31	4.6	3.0	026	31	4.4	1.6	019	27	3.9	1.1	035	26	4.9	3.0	043	24	4.2	1.6	360								
3.0 „	15	5.5	4.7	046	31	6.5	5.1	055	31	5.6	4.8	050	25	5.8	5.4	083	23	6.6	6.1	079	21	7.1	6.1	076								
3.6 „	15	6.2	5.6	053	31	6.0	5.3	054	20	5.5	5.0	050	24	6.8	6.3	083	21	7.0	6.7	085	18	7.6	6.7	081								
4.5 „	13	6.7	5.9	057	31	5.0	4.0	055	10	4.9	4.4	050	22	5.2	4.7	080	18	5.2	4.5	091	10	6.2	5.0	080								
5.4 „	11	6.1	4.4	049	31	5.2	2.1	038	1	6.0	6.0	315	19	5.0	3.9	074	14	4.9	2.7	050	5	4.2	3.5	083								
6.0 „	10	6.6	3.3	061	31	5.8	2.9	006	1	5.0	5.0	320	12	5.1	3.8	051	9	5.0	2.2	029	3	2.7	1.3	014								
7.2 „	7	4.8	2.4	340	31	5.9	2.6	335					10	4.9	3.5	006	8	6.3	0.7	234												
9.0 „	3	7.8	6.3	330	30	8.3	3.5	309					6	5.4	1.9	066	4	5.7	3.0	272												

Station	MINICOY												NAGPUR/SONEGAON															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.0	1.7	294	31	2.7	1.9	301	31	2.6	1.8	298	31	2.8	1.8	324	31	4.1	3.2	311	31	2.8	2.0	328				
0.15 a.g.	31	4.6	3.2	290	31	5.6	3.9	295	30	4.7	2.7	292	31	9.6	6.3	299	31	6.1	4.7	319	31	6.5	4.1	307				
0.3 a.m.s.l.	31	4.6	3.3	287	31	5.6	3.6	296	30	4.9	2.7	292																
0.6 „	31	4.6	3.1	292	31	6.2	4.2	299	31	5.3	3.2	292	31	10.2	6.8	295	31	6.3	4.4	316	31	6.2	3.9	306				
0.9 „	31	4.6	2.7	292	31	6.1	3.8	305	31	5.4	2.9	287	31	11.1	7.4	301	30	5.7	3.6	309	31	5.8	3.9	302				
1.5 „	29	4.6	1.0	328	31	5.2	2.2	311	28	4.8	1.2	301	31	7.8	4.8	283	30	5.8	4.1	306	31	6.0	4.0	302				
2.1 „	26	5.8	1.1	057	29	5.1	1.2	344	27	5.5	1.1	030	31	6.8	4.5	303	29	5.6	4.0	311	31	5.9	4.3	296				
3.0 „	23	6.6	1.5	087	26	6.9	1.9	012	22	6.2	3.2	075	31	5.9	3.5	309	29	6.8	3.9	311	31	6.5	4.9	303				
3.6 „	21	5.7	1.8	085	22	7.2	2.1	040	17	6.0	3.9	032	31	6.1	3.0	302	27	6.1	4.3	300	31	7.5	5.6	307				
4.5 „	16	4.5	1.2	074	21	6.8	2.2	039	13	5.1	4.3	093	31	6.4	4.0	300	28	6.3	5.1	296	31	7.8	5.8	304				
5.4 „	13	4.6	2.2	095	16	6.1	1.5	082	6	4.5	0.6	087	31	7.4	5.7	307	26	8.0	6.1	303	31	8.4	6.9	302				
6.0 „	10	5.2	1.3	066	16	5.7	1.5	035	4	5.3	1.1	195	31	8.5	6.2	315	25	8.7	7.2	306	31	8.8	7.2	308				
7.2 „	6	4.6	2.5	09	9	6.7	1.1	095					31	13.0	10.2	305	22	10.9	8.2	304	31	11.0	8.9	302				
9.0 „	4	4.5	3.5	030	3	6.0	2.8	293					30	12.5	10.3	296	21	11.5	9.4	293	31	12.1	10.0	290				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaishta 10, 1885 Saka)

Station	NAGPUR/SONEGAON				NEW DELHI/SAFDARJUNG												POONA											
	2330				0530*				1130				1730*				2330				0530							
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.4	1.4	287	31	2.6	1.0	309	31	2.6	1.1	327	31	3.2	2.6	324	31	1.9	0.6	275	31	0.6	0.6	270				
0.15 a.g.	31	7.4	4.0	277	31	6.6	2.3	340	31	4.1	1.9	328	31	6.3	5.3	327	31	7.9	4.7	004	31	4.7	4.2	274				
0.3 a.m.s.l.					31	6.1	2.5	339	31	4.2	2.0	348	31	5.5	4.5	329	31	5.7	2.9	015								
0.6 "	31	7.8	4.5	278	31	6.5	1.8	303	31	4.5	1.9	315	31	6.5	5.3	322	31	8.1	5.4	360	31	2.8	2.4	263				
0.9 "	31	7.5	4.7	284	31	6.0	2.5	317	31	4.9	1.7	300	31	6.8	5.7	317	31	7.8	4.8	352	31	5.7	4.9	293				
1.5 "	31	6.2	4.7	296	31	6.2	4.4	313	30	5.7	3.7	290	31	6.9	5.1	310	31	6.4	5.4	330	31	6.9	5.2	321				
2.1 "	31	5.2	3.9	311	31	8.1	6.5	303	29	7.7	5.6	292	31	6.9	5.7	292	28	7.8	4.9	295	31	5.6	3.0	318				
3.0 "	30	5.6	3.9	315	31	9.6	8.5	292	28	9.7	7.5	286	30	9.3	7.9	284	18	8.0	4.3	290	30	5.5	2.0	206				
3.6 "	12	6.7	4.5	315	31	11.5	10.3	287	25	10.4	8.2	283	30	11.1	9.0	284					29	5.4	3.3	204				
4.5 "	3	5.8	5.0	326	31	11.6	10.3	287	22	12.7	10.2	280	30	12.3	10.5	285					20	5.3	3.1	249				
5.4 "	1	3.0	3.0	010	31	12.6	12.3	291	22	15.0	13.4	280	30	12.7	10.8	292					8	6.2	3.5	269				
6.0 "	1	6.5	6.5	025	30	13.8	10.9	287	21	16.5	14.4	280	31	13.4	11.3	289					6	5.1	3.1	303				
7.2 "					29	15.9	13.4	286	14	21.1	18.4	280	30	17.0	14.2	290					3	4.8	4.0	345				
9.0 "					30	23.1	21.0	281	5	27.9	25.4	295	29	23.7	21.0	283					1	13.5	13.5	295				

Station	POONA								PORT BLAIR																			
	1730				2330				0530*				1130				1730*				2330							
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.4	1.3	278	31	1.0	1.0	268	21	1.4	0.8	223	31	3.8	1.3	155	31	1.7	1.0	210	31	1.9	0.9	209				
0.15 a.g.	31	6.0	5.2	284	31	6.4	5.8	269	31	4.0	1.1	233	30	4.6	1.9	130	31	4.7	2.0	198	29	4.1	1.7	199				
0.3 a.m.s.l.									31	4.3	1.2	217	30	4.6	1.6	150	31	4.8	2.0	198	29	4.2	1.8	200				
0.6 "	31	4.2	3.6	282	31	3.9	3.7	260	31	4.7	1.9	211	30	5.1	1.9	200	31	5.4	2.4	217	29	5.0	2.5	203				
0.9 "	31	6.3	5.7	290	31	7.1	6.2	275	31	5.1	2.3	211	28	4.6	1.6	226	31	5.1	2.3	230	27	4.5	2.2	193				
1.5 "	31	6.1	5.2	288	31	8.2	7.2	302	31	5.7	2.8	203	22	4.5	1.9	192	30	4.8	2.2	210	20	3.1	1.5	184				
2.1 "	31	4.4	2.6	308	31	6.5	3.2	057	31	6.0	3.1	189	15	5.2	1.6	182	30	5.1	2.6	184	16	3.6	2.0	177				
3.0 "	29	4.9	0.7	140	31	5.1	1.3	300	30	6.0	2.3	190	8	5.8	4.1	110	28	4.2	1.4	174	11	3.1	0.3	227				
3.6 "	28	4.2	0.5	132	28	5.1	2.2	139	30	5.3	1.6	203	4	4.5	3.6	100	27	4.3	1.2	226								
4.5 "	21	3.8	2.6	281	17	4.6	1.4	356	30	5.7	2.6	219	3	4.0	3.7	102	27	5.0	0.8	260								
5.4 "	20	4.7	2.5	299	12	5.8	2.9	277	30	6.5	3.5	227	3	4.2	3.7	086	27	5.3	1.3	229								
6.0 "	15	5.9	3.4	324	6	6.9	4.0	290	30	6.4	3.4	230	3	5.2	4.9	072	27	5.9	2.2	216								
7.2 "	12	7.1	5.1	342					29	7.5	4.1	251					29	6.7	3.5	227								
9.0 "	7	9.4	7.5	319					23	8.7	4.1	268					20	6.9	1.7	245								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaistha 10, 1885 Saka)

Station	RAIPUR												RAXAUL											
	0530				1730				2330				0530				1130				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	1.5	0.9	207	31	1.9	0.6	291	31	2.6	1.4	196	31	1.9	1.5	087	31	2.4	1.6	100	31	2.4	0.4	101
0.15 a.g.	30	5.8	3.8	248	31	4.4	1.6	284	31	8.6	3.9	217	31	7.3	6.1	097	30	6.8	5.1	117	29	5.9	0.8	072
0.3 a.m.s.l.													31	8.3	7.1	105	30	6.8	4.9	118	29	5.9	0.8	077
0.6 "	30	7.7	5.6	255	31	4.8	2.3	289	31	8.7	4.2	230	31	8.7	7.3	113	30	6.9	5.0	109	29	6.1	0.7	141
0.9 "	30	8.8	6.8	262	31	5.5	3.2	292	31	7.2	4.1	255	30	7.9	5.5	121	30	7.5	4.5	113	29	6.1	0.8	170
1.5 "	30	8.5	7.0	280	31	5.1	4.0	298	31	6.0	4.2	285	30	5.6	1.3	145	24	5.1	1.3	154	28	5.5	0.6	262
2.1 "	27	6.2	5.4	304	31	5.6	4.7	301	30	6.0	4.7	298	30	6.8	3.5	283	14	5.0	1.9	254	24	5.6	3.5	281
3.0 "	26	5.7	4.8	312	28	6.5	5.2	305	27	7.0	5.7	318	25	10.2	9.2	290	5	7.8	7.0	287	23	8.4	6.9	297
3.6 "	22	6.5	5.1	324	20	7.9	7.3	312	12	8.2	6.5	312	23	11.0	9.9	291					22	9.1	6.4	297
4.5 "	21	6.9	5.4	327	13	9.8	9.3	321					17	10.6	9.6	303					18	9.9	8.6	306
5.4 "	12	7.6	6.2	300	9	9.4	9.0	319					10	12.4	10.9	300					15	10.3	9.9	293
6.0 "	9	8.4	6.4	307	8	9.9	9.2	308					7	11.8	10.2	292					8	7.7	6.7	310
7.2 "					2	11.7	11.3	315																
9.0 "																								

Station	SILIGURI/BAGHDOGRA												SRINAGAR											
	0530				1130				1730				2330				0530*				1730*			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	2.7	2.5	057	31	3.3	2.5	106	31	2.4	1.5	067	31	2.8	2.1	060	29	1.1	0.3	132	24	1.2	0.8	303
0.15 a.g.	25	5.5	5.3	068	29	4.7	3.9	104	31	4.4	3.0	071	29	5.3	4.9	075	29	2.0	0.6	136	24	2.2	1.6	312
0.3 a.m.s.l.	25	5.4	5.3	075	29	4.7	3.8	103	31	4.4	3.0	073	29	5.3	4.9	078								
0.6 "	25	5.9	5.5	081	29	4.5	3.7	100	31	4.2	3.6	089	29	5.4	4.9	084								
0.9 "	25	5.2	4.7	087	29	4.5	3.3	098	30	4.7	2.8	098	26	4.5	4.0	095								
1.5 "	22	4.4	2.0	141	16	3.9	0.6	113	27	4.8	0.3	186	22	4.6	1.6	114								
2.1 "	15	6.1	1.1	253	9	6.3	3.2	247	23	6.6	3.6	265	18	6.6	2.3	259	29	1.6	0.5	158	24	2.0	0.5	274
3.0 "	10	8.5	5.8	282	3	7.0	3.4	207	15	8.2	5.0	279	12	6.7	4.0	267	29	2.5	0.9	083	24	2.9	0.7	184
3.6 "	8	9.9	8.3	274					12	6.5	2.9	279	2	8.7	8.7	272	29	4.1	1.7	141	24	3.9	1.6	198
4.5 "	4	11.1	10.2	285					10	6.8	5.5	277					29	5.5	1.6	166	24	5.3	2.7	229
5.4 "	2	9.5	5.4	313					5	7.3	2.6	270					29	6.9	2.3	237	24	6.9	4.1	254
6.0 "	2	8.7	3.6	333					5	7.0	3.6	277					28	9.4	4.7	255	24	8.5	5.1	272
7.2 "									2	6.5	5.1	353					27	12.1	8.2	270	24	11.2	8.5	282
9.0 "									1	16.5	16.5	300					25	16.6	13.8	277	19	16.2	14.1	275

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaishta 10, 1885 Saka)

Station	TIRUCHCHIRAPPALLI												TRIVANDRUM															
	0530				1730				2330				0530*				1130				1730*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	3.6	2.3	258	31	3.9	0.9	162	31	4.8	2.7	188	31	1.7	1.3	355	31	2.1	1.7	306	31	3.2	2.3	280				
0.15 a.g.	31	5.8	4.0	254	31	5.7	1.3	174	30	7.0	4.1	198	31	4.5	3.7	335	31	4.3	3.3	299	31	5.8	4.5	290				
0.3 a.m.s.l.	31	6.3	4.6	257	31	5.8	1.4	179	30	7.5	4.5	198	31	4.8	4.1	326	31	4.4	3.5	296	31	5.9	4.6	288				
0.6 "	31	6.6	4.7	266	31	5.1	1.4	195	30	8.4	5.3	207	31	5.7	4.4	317	31	5.2	4.5	305	31	6.4	5.1	290				
0.9 "	31	6.2	4.2	258	31	4.9	1.4	189	30	7.5	4.7	209	31	5.6	4.4	320	30	5.1	4.3	314	31	5.7	4.2	305				
1.5 "	31	3.5	1.5	273	31	4.2	1.5	208	30	4.0	1.7	270	31	5.0	3.0	328	25	4.8	2.8	323	31	5.3	3.2	351				
2.1 "	31	4.2	2.7	047	31	3.3	0.6	345	29	4.4	2.6	020	31	5.2	3.0	022	16	5.7	2.8	347	31	6.3	3.7	020				
3.0 "	31	6.3	5.3	061	27	4.9	3.9	036	25	6.1	5.3	059	30	5.3	4.0	060	8	6.0	3.6	029	31	5.5	4.0	054				
3.6 "	29	6.4	5.4	063	24	5.9	4.6	050	20	6.3	5.8	063	29	4.5	3.6	076	5	8.5	7.7	049	30	4.8	3.9	069				
4.5 "	26	6.3	5.2	055	18	4.9	4.2	063	16	4.7	3.6	067	29	4.7	3.0	085	2	7.7	7.7	057	30	4.4	3.4	065				
5.4 "	25	5.3	3.7	045	15	4.5	3.1	078	9	5.7	1.7	059	29	4.5	2.4	082	1	5.0	5.0	025	29	3.7	1.9	076				
6.0 "	22	5.1	2.7	024	14	5.1	2.2	054	5	5.8	1.4	037	29	4.8	1.8	053	1	6.5	6.5	355	29	4.6	1.3	034				
7.2 "	18	4.1	0.9	076	9	4.0	1.0	042					28	5.3	2.1	037	1	1.5	1.5	170	29	5.1	0.8	049				
9.0 "	8	4.7	2.0	297	6	4.2	0.2	291					26	5.7	0.1	097	1	1.5	1.5	025	29	5.2	1.2	318				

Station	TRIVANDRUM				UDAIPUR												VENGURLA											
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	2.5	1.0	354	31	1.2	0.7	297	31	1.9	1.3	261	31	1.7	1.4	256	31	0.6	0.6	335	31	3.8	3.4	285				
0.15 a.g.	28	5.0	3.1	325	31	4.0	3.1	295	31	5.5	4.2	269	31	5.7	5.0	271	30	4.4	3.9	344	31	5.8	5.5	250				
0.3 a.m.s.l.	28	5.6	3.8	308													30	5.5	4.9	338	31	6.1	5.7	297				
0.6 "	28	7.0	5.4	305													30	6.3	5.5	331	31	5.6	5.0	305				
0.9 "	28	6.6	5.1	310	31	5.2	4.3	295	31	5.7	4.6	270	31	6.5	5.8	287	28	6.0	5.1	327	31	5.2	3.9	321				
1.5 "	25	5.5	3.4	331	31	6.7	5.5	255	31	5.0	4.6	271	30	7.6	6.7	285	26	6.1	5.1	322	30	5.0	3.5	340				
2.1 "	19	6.0	2.8	045	31	5.6	3.2	268	30	4.6	3.9	275	30	6.5	5.0	280	23	4.5	1.4	326	27	4.4	2.5	353				
3.0 "	11	7.1	6.1	080	30	5.9	3.1	251	28	4.6	3.3	278	26	4.4	1.6	220	21	4.8	3.7	110	26	4.3	1.4	095				
3.6 "	9	4.1	3.5	093	26	6.5	3.4	246	25	5.0	3.2	280	14	6.0	2.6	230					24	4.0	2.8	110				
4.5 "	8	3.4	1.6	095	23	8.4	6.0	255	24	6.8	5.1	270	4	6.5	4.9	230					23	3.4	1.6	092				
5.4 "	4	3.3	2.9	127	22	10.3	8.4	271	21	8.7	7.2	277	1	2.5	2.5	115					21	3.9	1.4	063				
6.0 "	2	3.3	2.7	117	20	10.6	7.8	275	19	10.4	8.1	278									20	5.2	1.8	009				
7.2 "	2	3.5	3.5	118	17	13.3	10.4	286	15	14.8	12.0	290									9	7.4	4.2	002				
9.0 "					7	15.8	12.9	291	7	20.4	11.2	323									4	5.7	3.7	031				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

May, 1963 (Vaisakha 11—Jyaistha 10, 1885 Saka)

Station	VENGURLA				VERAVAL												VIJAYWADA/GANNAVARAM											
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.4	1.3	314	31	4.3	3.5	317	31	7.7	7.6	271	31	6.1	5.5	299	31	2.0	0.5	199	31	4.7	3.3	183				
0.15 a.g. . .	31	4.4	4.1	317	31	8.4	8.0	305	31	8.5	8.3	275	31	8.7	8.6	291	31	5.3	3.7	205	31	5.5	3.8	181				
0.3 a.m.s.l. .	31	5.3	4.9	323	31	9.0	8.6	303	31	8.9	8.6	277	31	9.8	9.6	292	31	7.5	5.9	206	31	5.4	3.7	182				
0.6 „ . . .	31	6.0	5.4	325	31	9.3	8.9	301	31	7.8	7.4	287	31	9.6	9.4	292	30	8.8	7.2	210	31	4.5	2.8	193				
0.9 „ . . .	31	5.7	4.8	321	31	8.2	7.8	296	31	6.4	5.9	292	31	8.1	7.6	290	27	8.8	5.8	233	31	3.4	1.6	227				
1.5 „ . . .	30	5.4	3.9	314	31	6.3	4.7	274	31	5.3	4.1	315	31	5.7	4.1	285	27	4.8	1.6	251	31	3.9	2.8	318				
2.1 „ . . .	25	4.1	1.0	357	31	5.8	3.9	258	31	5.3	3.3	284	30	5.6	3.5	272	27	3.9	2.2	351	30	4.9	3.6	348				
3.0 „ . . .	22	4.8	3.9	109	23	6.6	4.1	238	31	5.8	3.8	255	30	6.1	3.2	238	25	5.5	5.1	008	30	5.5	4.0	015				
3.6 „ . . .	4	4.7	3.7	111	10	8.0	6.2	223	31	6.4	3.6	248	26	6.2	3.4	228	23	6.5	6.1	008	29	5.4	3.5	010				
4.5 „ . . .					1	3.0	3.0	270	31	6.6	2.6	245	17	5.5	2.4	221	19	6.8	6.1	015	28	5.7	3.7	353				
5.4 „ . . .									31	6.8	3.9	265	9	5.4	2.1	300	18	5.9	4.1	009	27	7.0	4.6	334				
6.0 „ . . .									31	7.1	4.7	272	7	4.8	3.7	303	17	6.9	4.0	005	24	6.1	3.5	320				
7.2 „ . . .									31	8.6	6.5	278	3	4.7	3.6	337	14	7.6	3.6	334	21	7.0	3.8	320				
9.0 „ . . .									30	11.1	8.8	280					11	8.6	5.0	332	12	6.4	1.9	353				

Station	VIJAYWADA/ GANNAVARAM				VISHAKHAPATNAM															
	2330				0530*				1130				1730*				2330			
Time in I.S.T.																				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.6	2.0	184	31	2.6	2.5	267	31	4.9	3.7	217	31	4.1	3.1	260	31	2.7	2.4	221
0.15 a.g. . .	30	7.5	6.5	181	31	6.6	6.0	273	31	5.4	4.5	216	31	5.3	4.3	248	31	5.0	4.1	219
0.3 a.m.s.l. .	30	8.6	7.4	185	31	7.1	6.5	265	31	5.7	5.1	226	31	5.7	4.9	243	31	5.6	4.5	229
0.6 „ . . .	30	8.1	5.6	188	31	9.2	8.7	237	30	5.3	4.8	248	31	7.0	6.4	238	30	6.1	5.2	240
0.9 „ . . .	30	5.3	3.4	188	31	8.1	7.5	238	29	5.2	4.7	265	31	6.5	6.0	259	28	5.3	4.5	257
1.5 „ . . .	30	3.5	0.3	297	31	5.4	4.7	269	27	5.3	4.1	307	31	5.1	4.1	312	28	4.4	3.3	284
2.1 „ . . .	30	3.7	2.3	357	31	5.1	3.4	323	25	4.8	3.4	336	31	5.2	3.6	350	27	4.0	2.6	328
3.0 „ . . .	30	5.3	3.8	010	31	6.8	5.6	350	23	4.9	3.6	013	31	5.7	4.8	005	22	4.9	3.3	344
3.6 „ . . .	27	5.6	4.2	008	31	6.9	5.9	356	22	5.3	4.2	011	31	6.4	5.1	002	15	5.1	3.3	351
4.5 „ . . .	18	5.0	3.8	357	30	7.9	6.2	353	21	6.0	3.8	345	30	7.5	5.9	351	12	4.6	3.5	330
5.4 „ . . .	14	4.9	3.6	334	30	7.6	5.9	348	18	6.8	4.9	310	30	7.7	5.6	334	8	5.3	3.3	299
6.0 „ . . .	11	5.8	4.4	336	30	8.0	5.7	337	16	6.7	4.4	303	30	8.1	5.7	317	5	5.2	3.2	274
7.2 „ . . .	3	7.2	1.9	282	30	8.4	5.3	318	12	8.9	5.4	306	30	9.2	6.7	296	1	5.5	5.5	200
9.0 „ . . .					30	9.6	5.8	309	8	7.6	4.1	322	30	9.4	5.7	294				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 Km. above mean sea level

May, 1963 (Vaisakha 11—Jyaistha 10, 1885 Saka)

Ht. in Km.	n	V	v	D
VISHAKHAPATNAM				
1130 hr.				
10.5	7	9.3	6.5	349
12.0	7	11.1	3.9	035
14.1	5	9.7	6.8	058
16.2	3	12.3	4.8	006
18.0	1	10.0	10.0	360
1730 hr.*				
10.5	27	10.7	6.3	313
12.0	27	11.2	7.9	313
14.1	25	12.3	3.7	339
16.2	23	12.1	8.1	080
18.0	16	15.2	13.1	092
21.0	5	17.4	17.2	095

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

List of Radiosonde stations in India

Serial No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	Ahmadabad	Fan type	20th July 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October 1944	00 and 12	
3	Bangalore	Fan type	10th March 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July 1955	00 and 12	
7	Jodhpur	Clock type	17th April 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June 1946	00 and 12	
9	Minicoy	Fan type	12th May 1963	12	
10	Nagpur/Sonegaon	Fan type	1st October 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December 1943	00 and 12	
12	Port Blair	Fan type	4th December 1949	00 and 12	
13	Srinagar	Clock type	1st August, 1962	00 and 12	
14	Trivandrum	Fan type	1st July 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 Hours G.M.T.

May 1963 (Vaishaka 11,—Jaiyatha 11 1885 Saka)

Standard Pressure Surface mbs	SRINAGAR Surf. Pr. (838 mb.)						TRIRVANDRUM (999 mb)						VISHAKHAPATNAM (998 mb)					
	No. of obs.	Ht. gpm.	Temperature °A				No. of obs.	Ht. gpm.	Temperature °A				No. of obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	24	1588	295.3	304	287	284.4	31	064	302.4	305	299	297.4	31	041	304.0	305	301	299.4
1000	24	034	..	..	..	..	30	051	..	..	..	..	31	027	..	..	..	..
900	24	965	..	..	..	..	31	984	295.3	298	293	291.9	31	965	299.0	305	293	292.2
850	24	1463	..	..	..	..	31	1480	292.4	297	290	289.1	31	1470	297.3	304	291	288.0
800	24	1988	291.4	301	285	278.5	31	2004	289.6	293	287	285.6	31	1999	293.2	300	286	284.0
700	24	3118	282.8	293	278	269.4	30	3128	283.6	286	281	276.4	31	3135	285.0	291	279	276.6
600	24	4374	272.4	279	267	262.4	30	4399	275.6	279	268	269.2	31	4407	276.0	279	271	270.3
500	24	5804	262.4	270	257	..	30	5852	267.9	272	263	..	31	5862	267.0	273	264	..
400	24	7482	250.5	257	245	..	30	7572	257.7	263	251	..	31	7585	257.4	262	250	..
300	20	9537	237.3	242	231	..	30	9688	243.2	249	236	..	30	9696	243.3	249	227	..
250	19	10789	231.6	240	220	..	28	10958	234.0	239	226	..	28	10972	234.3	241	226	..
200	19	12287	225.6	233	215	..	26	12453	222.8	228	213	..	27	12467	223.4	233	219	..
175	17	13165	223.4	233	213	..	23	13305	217.7	222	208	..	26	13347	216.8	227	213	..
150	15	14168	220.3	229	214	..	23	14299	209.7	217	202	..	25	14294	210.6	221	205	..
125	13	15311	214.6	225	207	..	23	15371	204.4	209	199	..	24	15386	204.5	216	199	..
100	10	16731	211.8	221	202	..	22	16699	198.0	201	192	..	23	16733	199.5	209	191	..
80	7	18193	210.3	218	204	..	15	18027	198.7	201	194	..	15	18057	200.2	211	193	..
70	6	18895	210.3	215	205	..	11	18838	200.5	205	194	..	15	18847	202.5	211	194	..
60	6	19931	213.0	216	209	..	8	19773	201.9	208	196	..	12	19776	207.0	215	199	..
50	5	21118	217.4	220	215	..	6	20986	206.2	212	196	..	9	20898	212.2	218	203	..
40	..	..	..	..	..	..	..	..	..	..	..	..	5	22279	213.0	218	207	..
30	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

NOTE:—Number of observations refer to those of dynamic height. Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273°A.

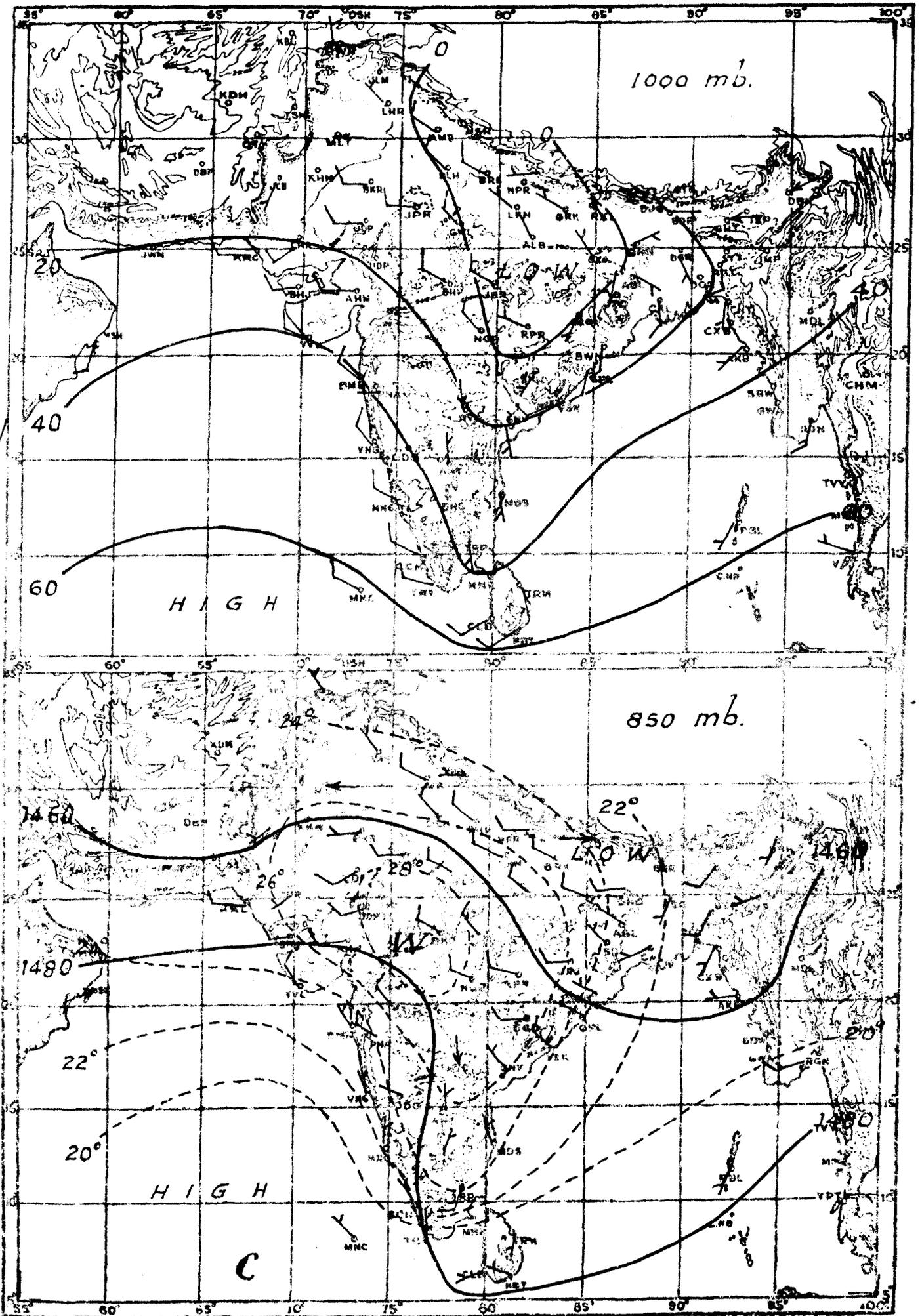
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I Met.D.

MAY 1963

Plate I



RESULTANT WIND 5 Knots, 10 Knots, 50 Knots.

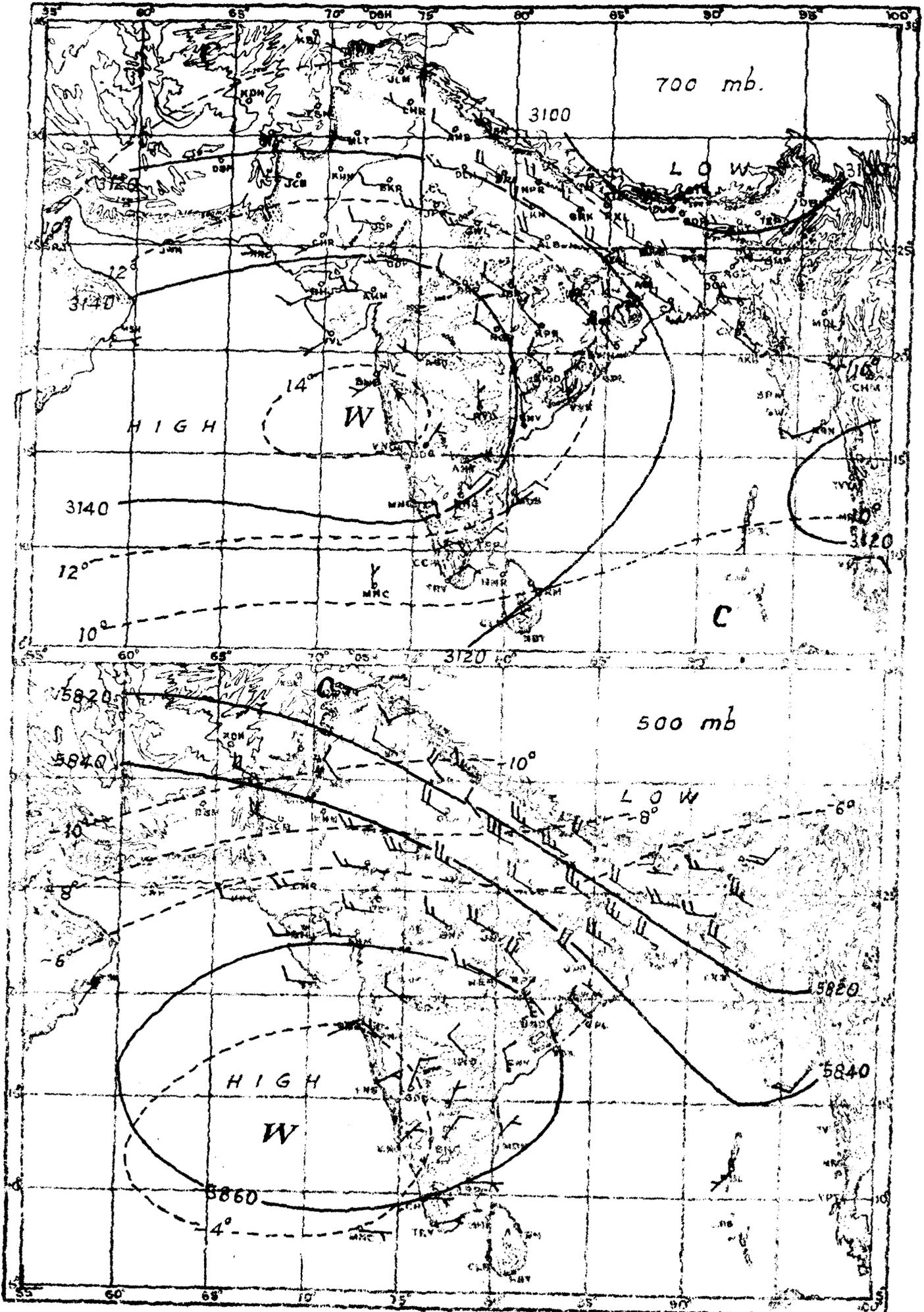
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I. Met. D.

MAY 1963

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

DDGC/1581(ii)-4-67
 I.M.D. 1963, 100

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

JUNE 1963

Published by authority of the Government of India

Chief features—

(i) Onset of the southwest monsoon over major parts of the country more or less according to the normal time schedules;

(ii) Good activity of the monsoon in the Peninsula and northeast India;

(iii) Heavy rains leading to floods in Assam; and

(iv) Formation and movement of two depressions from the Bay of Bengal.

The upper air low which was lying over the south Peninsula on 31st May moved northwestwards to east central Arabian Sea by the evening of 1st June and persisted there as a trough between 3.0 and 6.0 kms a. s. l. till 3rd. Later, it weakened and became unimportant. In association with it, the monsoon which had advanced into the extreme south Kerala on 31st May extended rapidly northwards upto the south Konkan by 5th. A sea level trough which developed in the east central Arabian Sea off the Konkan coast on 7th shifted slightly northwards and persisted off the Kathiawar-Konkan coasts till 12th. Under its influence, the monsoon steadily advanced further northwards and covered the Gujarat State by 12th. Heavy to very heavy rains fell at a number of places in the west coast and the ghats and also in Gujarat State during this period. Some of the noteworthy amounts were : Gadag 10 cm on 2nd, Mangalore 9 cm on 7th, Calicut 10 cm on 7th, Honavar 10 cm on 10th and 9 cm on 11th, Ratnagiri 9 cm on 10th and 10 cm on 11th, Devgad 17 cm on 10th and 8 cm on 11th, Vengurla 18 cm on 10th, Porbandar 9 cm on 11th and Jeur 10 cm on 5th.

The Bay branch of the monsoon which had advanced into the south and east central Bay of Bengal during the last week of May was fairly active during the first week of this month. Nan Cowrie recorded 26 cm of rain on 1st and Car Nicobar 15 cm on 1st and 10 cm on 2nd. An upper air low developed over the north Andaman Sea on 1st, between 3.0 and 9.0 kms a. s. l. Moving northwestwards, it intensified and concentrated into a depression by the morning of 6th, with centre about 150 kms south of Calcutta. It moved northnortheastwards and crossed the Sunderbans coast the same night. Later it weakened over upper Assam and dissipated by the evening of 8th. Under its influence, the Bay branch of the monsoon advanced northwards and covered most parts of northeast India by 11th. Some of the noteworthy amounts of rainfall recorded were : Darjeeling 20 cm on 7th, Tura 22 cm, Shillong 18 cm, Agartala 12 cm and Goalpara 11 cm on 8th, Jalpaiguri 18 cm and Cooch Behar and Siliguri 10 cm each on 9th, North Lakhimpur 11 cm on 12th, Haflong and Chapra 11 cm each and Siliguri 10 cm on 13th, Pasighat 16 cm on 14th and Cherrapunji 40 cm on 9th, 23 cm on 12th and 24 cm on 14th. A feeble sea level low formed over Gangetic West Bengal and adjoining Bay of Bengal on 15th and persisted over the land area till 18th. Later, it moved into Assam and filled up by 20th. Under its influence the monsoon continued to be active over Assam and other parts of northeast India till the end of the third week. Some of the more important amounts of rainfall recorded were : Angul 10 cm on 16th, Keonjhar 9 cm on 17th, Calcutta (Dum Dum) 11 cm and Jamshedpur 10 cm on 18th and Cherrapunji 59 cm, Tezpur 16 cm and Shillong 14 cm on 20th. According to press reports, the continuous heavy rains in the catchment areas caused the water level in the Brahmaputra and other rivers in Assam to rise above the danger levels. The bunds and roads between Nowgong and Gauhati had been breached at several places and flood waters entered many villages, the most affected area being Nowgong district. The rainfall decreased considerably during the fourth week, but towards the end of the month, there was rain again in some parts of northeast India, Cooch Behar recorded 23 cm of rain and Pasighat 12 cm on 29th and Asansol 12 cm on 30th. There was, however, a temporary improvement in the flood situation in Assam.

The monsoon which was weak along the west coast since 12th revived its activity when a feeble sea level trough developed off the Konkan-Kanara coast on 18th. The trough more or less persisted with varying positions along the west coast till the end of the month and kept up the activity of the monsoon along the west coast.

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Under the influence of a trough of low pressure moving from the east, a depression formed over the north Andaman Sea on the morning of 23rd, with centre about 250 kms south of Rangoon. Moving in a northwesterly direction, it crossed near Gopalpur on the afternoon of 26th. Thereafter, it weakened into a low and moving westwards lay with its central region near Adilabad on 27th morning. The low initially moved northwestwards and later recurved northeastwards to west Uttar Pradesh when it merged into the seasonal trough by 30th. Under its influence, there was good activity of the monsoon in the Bay Islands, the Peninsula and central parts of the country. Some of the noteworthy amounts of rainfall recorded during this spell were : Port Blair 16 cm and Long Island 14 cm on 23rd, Ratnagiri 17 cm, Sholapur 13 cm and Bhadrachalam Road 11 cm on 27th and Khandala 9 cm on 28th. The monsoon also advanced into east Rajasthan and west Uttar Pradesh by the end of the month. Idar recorded 9 cm of rain and Jhansi 8 cm on 30th.

A number of troughs in the westerlies caused spells of good precipitation in the Western Himalayas and in the adjoining plains. Some of the important amounts of rainfall recorded were : Gonda 12 cm on 7th, New Delhi 8 cm on 12th, Askote 14 cm on 18th and Dharchula 7 cm on 21st. According to press reports, a severe local thundersquall of 98 m. p. h. accompanied by rain and hail hit Ambala on 6th, causing serious interruption of telecommunications and power supply. There were also press reports of thundersqualls causing damages at Bhopal on 1st, Mussoorie on 9th Kanpur on 10th and 11th New Delhi on 11th and Amritsar on 16th.

The total rainfall for the month was in moderate excess in Marathwada and Telangana and in slight excess in Gangetic West Bengal, the Punjab (I) and north Interior Mysore. It was in slight defect in the Bay Islands, Sub-Himalayan West Bengal, Bihar Plateau, east Rajasthan, Madhya Pradesh, Madhya Maharashtra, Rayalaseema and coastal Mysore, in moderate defect in east Uttar Pradesh, Jammu and Kashmir, south Interior Mysore, Kerala and the Arabian Sea Islands and in large defect in west Rajasthan and Gujārat State. It was normal over the rest of the country outside Himachal Pradesh.

Mean maximum temperature was above normal in Jammu and Kashmir and below normal in Vidarbha and Telangana. It was normal over the rest of the country outside Himachal Pradesh. Mean minimum temperature was below normal in east Madhya Pradesh, Vidarbha and Telangana and normal over the rest of the country outside Himachal Pradesh.

Mean relative humidity in the morning was above normal in the Punjab (I) east Madhya Pradesh, Vidarbha, Telangana and north Interior Mysore and below normal in Jammu and Kashmir. It was normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was above normal in east Uttar Pradesh and north Interior Mysore and below normal in Jammu and Kashmir and west Rajasthan. It was normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 08 30 hrs. IST of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. IST of the date given in the succeeding column.

POONA-5,

The 5th August, 1963.

R. ANANTHAKRISHNAN,
for DIRECTOR GENERAL OF OBSERVATORIES

Table with 28 columns: 1-3 (Station/Time), 4-6 (Mean pressure), 7-9 (Mean temperature), 10 (Vapour pressure), 11 (Relative humidity), 12 (Departure from normal), 13-14 (Cloud amount), 15 (Wind speed in Km. per hour), 16-18 (Wind speed sub-categories), 19-28 (Wind direction and observations).

Sub-Division and station	Hour of observation I. S. T.	Station elevation in meters	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbi.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Mean wind speed, Km. per hour	Wind Speed (Km. p.h.)			No. of observations									
			At mean sea level or height g. p. m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction									
																		N	NE	E	SE	S	SW	W	NW	Ca-lm	Va-ri-able
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
HYDROMETEOROLOGICAL OBSERVATORIES—(contd).																											
Ghaghara Catchment (Trans Himalayan Region)																											
Dailekh . . .	0830	..	..	..	..	22·2	20·1	19·1	22·1	82	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	24·8	21·1	19·3	22·4	71	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ghaghara Catchment																											
Dadeldhura . . .	0830	..	..	..	..	19·3	17·6	16·7	19·0	85	..	5·0	..	3·5	0	0	26	6	6	5	1	1	1	1	5	4	0
	1730	..	..	..	..	21·2	18·5	17·1	19·5	78	..	4·8	..	4·5	0	0	30	5	2	2	1	1	1	1	17	0	0
Sallayana . . .	0830	..	..	..	..	22·9	20·2	18·8	21·7	77	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	23·2	20·5	19·1	22·1	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Butwal . . .	0830	..	..	..	..	28·7	25·4	23·9	29·7	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	31·3	26·6	24·7	31·1	67	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Baghmati Catchment																											
Katmandu* . . .	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1130	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kosi Catchment																											
Chautara . . .	0830	..	..	..	..	21·0	19·8	19·2	22·2	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	22·8	20·7	19·9	23·2	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chepua . . .	0830	..	..	..	..	19·3	17·6	17·0	19·4	87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	19·0	17·8	17·4	19·9	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Walungchung Gola . . .	0830	..	..	..	..	13·3	11·6	10·5	12·7	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	12·3	11·6	11·1	13·2	93	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplethok . . .	0830	..	..	..	..	21·9	19·6	18·3	21·0	81	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	22·0	20·0	19·0	22·0	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur . . .	0830	..	..	..	..	21·1	19·8	19·1	22·1	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	20·3	19·4	18·9	21·8	92	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung . . .	0830	..	..	..	..	19·3	18·3	17·7	20·4	91	..	6·3	..	..	..	..	..	1	0	0	0	2	0	0	1	26	0
	1130	..	..	..	..	22·1	19·5	18·3	21·0	80	..	6·9	..	..	..	..	..	2	0	0	0	11	1	4	8	4	0
	1730	..	..	..	..	20·8	18·8	17·8	20·4	83	..	7·4	..	..	..	..	..	0	0	0	0	8	6	4	1	11	0
Okhaldhung . . .	0830	..	..	..	..	19·5	18·3	17·6	20·2	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1130	..	..	..	..	21·6	19·3	18·2	20·9	82	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	19·6	18·3	17·7	20·2	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chainpur . . .	0830	..	..	..	..	22·9	21·2	20·3	23·8	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	22·9	21·3	20·5	24·1	87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angbung† . . .	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barabakhetra . . .	0830	146	1002·0	985·7	..	27·9	25·4	24·3	30·0	81	..	6·2	..	2·6	0	0	25	0	2	0	0	0	15	1	7	5	0
	1130	..	1000·8	984·6	..	29·9	26·3	24·8	31·3	75	..	6·0	..	4·5	0	0	28	0	3	1	0	2	14	8	0	2	0
	1730	..	998·5	982·4	..	29·9	26·6	25·2	32·2	77	..	5·4	..	2·4	0	0	23	0	2	3	0	0	15	0	3	7	0
Tista Catchment																											
Gangtok . . .	0830	1812	1443·5	814·7	..	18·9	17·9	17·3	19·9	91	..	6·3	..	0·9	0	0	7	2	5	0	0	0	0	0	0	23	0
	1130	..	1435·7	814·2	..	21·1	19·2	18·3	21·0	85	..	6·5	..	1·7	0	0	17	5	10	0	1	0	0	1	0	13	0
	1730	..	1418·2	812·5	..	20·0	18·7	18·0	20·8	89	..	7·1	..	1·1	0	0	10	2	5	0	1	1	1	0	0	20	0
Gesling . . .	0830	..	..	..	..	20·9	19·6	18·9	21·8	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	21·4	19·9	19·3	22·4	87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Data included under Nepal.

†Data not available.

MONTHLY MEANS OF UPPER WINDS

June 1963, (Jyaistha 11—Asadha 9, 1885 Saka)

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 49 stations all the observations were taken by means of pilot balloons and at 14 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n—represents the number of observations;

V—represents the mean wind speed in metres per second irrespective of direction;

v—represents the resultant mean velocity in metres per second;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0, and 36.0 km. a.m.s.l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S.No.	Station	Lat. N.	Long. E.	Height of anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
1.	Agartala	23°53'	91°15'	17	28th November, 1951	0530	1130	1730	2330
2.	Ahmadabad	23°04'	72°38'	61	19th May, 1928	0530*	1130	1730*	2330
3.	Allahabad/Bamhrauli	25°27'	81°44'	103	28th February, 1930	0530*	1130	1730*	2330
4.	Ambala	30°23'	76°46'	279	1st April, 1941	0530	1130	1730	2330
5.	Anantapur	14°41'	77°37'	365	12th February, 1946	0530		1730	2330
6.	Asansol	23°41'	86°59'	135	29th May, 1942	0530	1130	1730	2330
7.	Aurangabad/Chikalthan	19°51'	75°24'	583	7th October, 1951	0530		1730	2330
8.	Bahraich	27°34'	81°36'	134	1st October, 1961	0530	1130	1730	
9.	Bangalore	12°58'	77°35'	936	19th May, 1915	0530@	1130	1730@	2330
10.	Bareilly	28°22'	79°24'	181	12th January, 1943	0530		1730	
11.	Begampet	17°27'	78°28'	543	1st September, 1929	0530		1730	2330
12.	Bhagalpur	25°14'	86°57'	61	19th May, 1950	0530	1130	1730	
13.	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943	0530		1730	2330
14.	Bhubaneshwar	20°15'	85°50'	54	5th December, 1942	0530	1130	1730	2330
15.	Bhuj/Rudramata	23°15'	69°48'	90	14th September, 1937	0530		1730	2330
16.	Bikaner	28°00'	73°18'	229	18th October, 1946	0530		1730	2330
17.	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933	0530*	1130	1730*	2330
18.	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921	0530*	1130	1730*	2330
19.	Cochin/Willingdon†	09°56'	76°14'	13	16th March, 1942	0530		1730	2330
20.	Dehra Dun	30°19'	78°03'	692	1st October, 1958	0530		1730	
21.	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June, 1948	0530	1130	1730	2330
22.	Gadag	15°25'	75°38'	650	3rd May, 1943	0530		1730	2330
23.	Gangtok	27°20'	88°37'	1778	1st June, 1963	0530		1730	
24.	Gauhati	26°05'	91°43'	55	12th March, 1955	0530*	1130	1730*	2330
25.	Gaya	24°45'	84°57'	119	19th March, 1937	0530	1130	1730	2330
26.	Gopalpur	19°16'	84°53'	24	15th February, 1946	0530		1730	2330
27.	Gorakhpur	26°45'	83°22'	83	5th January, 1943	0530		1730	
28.	Gwalior	26°14'	78°15'	208	7th May, 1938	0530	1130	1730	2330
29.	Imphal/Tulihal	24°46'	93°54'	782	8th March, 1952	0530	1130	1730	2330
30.	Jabalpur	23°10'	79°57'	402	30th July, 1928	0530		1730	2330
31.	Jagdalpur	19°05'	82°02'	562	25th March, 1948	0530		1730	2330
32.	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953	0530	1130	1730	2330
33.	Jamshedpur	22°49'	86°11'	144	23rd July, 1942	0530		1730	
34.	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530		1730	2330
35.	Jodhpur	26°18'	73°01'	229	15th October, 1934	0530*	1130	1730*	2330
36.	Lucknow/Amausi	26°45'	80°53'	133	20th November, 1950	0530		1730	2330
37.	Madras/Minambakkam	13°00'	80°11'	29	8th April, 1926	0530*	1130	1730*	2330
38.	Mangalore/Bajpe	12°55'	74°53'	104	25th May, 1959	0530		1730	2330
39.	Minicoy	08°18'	73°00'	15	14th April, 1941	0530		1730*	2330
40.	Nagpur/Sonegaon	21°06'	79°03'	316	23rd April, 1943	0530*	1130	1730*	2330
41.	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936	0530*	1130	1730*	2330
42.	Poona	18°32'	73°51'	593	5th January, 1925	0530		1730	2330
43.	Port Blair	11°40'	92°43'	95	29th October, 1945	0530*	1130	1730*	2330
44.	Raipur	21°14'	81°39'	308	15th July, 1944	0530		1730	2330
45.	Raxaul	26°59'	84°51'	83	28th October, 1957	0530	1130	1730	
46.	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530	1130	1730	2330
47.	Srinagar	34°06'	74°48'	1603	1st August, 1962	0530*		1730*	
48.	Tiruchchirappalli	10°46'	78°43'	96	22nd June, 1936	0530		1730	2330
49.	Trivandrum	08°29'	76°57'	73	8th December, 1928	0530*	1130	1730*	2330
50.	Udaipur	24°35'	73°42'	587	24th June, 1947	0530		1730	2330
51.	Vengurla	15°52'	73°38'	8	22nd November, 1941	0530		1730	2330
52.	Veraval	20°54'	70°22'	17	13th October, 1941	0530		1730	2330
53.	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942	0530		1730	2330
54.	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928	0530*	1130	1730*	2330

* Radio wind ascents.

@ Radiosonde ascents followed by optical theodolite.

† Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	AGARTALA																AHMEDABAD							
	0530				1130				1730				2330				0530*				1130			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	2.6	2.3	148	15	3.6	2.9	181	30	2.8	2.1	158	30	3.2	2.7	168	30	2.7	2.4	247	30	4.9	4.2	238
0.15 a. g. . .	21	5.3	4.5	153	13	4.9	4.3	178	25	5.0	3.7	170	26	7.2	6.5	172	30	6.5	5.9	246	30	6.6	5.9	234
0.3 a. m. s. l. .	21	6.3	5.2	174	13	5.1	4.6	181	25	5.7	4.5	174	26	8.3	7.5	181	30	7.3	6.6	246	30	6.6	5.9	238
0.6 „ . . .	19	6.1	4.7	181	13	5.0	4.5	182	23	6.7	6.0	181	24	8.9	8.0	185	30	8.6	7.6	248	30	6.9	6.5	240
0.9 „ . . .	18	6.4	3.8	188	12	5.8	4.5	176	22	6.7	5.9	185	22	8.4	7.0	187	30	9.5	8.7	250	30	7.8	7.2	245
1.5 „ . . .	18	6.3	2.1	187	8	6.6	3.8	172	19	6.5	4.2	195	17	6.4	3.7	187	30	7.8	5.9	248	26	8.0	6.4	244
2.1 „ . . .	15	6.6	1.6	111	5	6.6	4.3	233	18	7.6	3.4	204	12	7.8	2.6	191	30	7.2	3.0	255	17	7.0	3.1	210
3.0 „ . . .	13	5.7	0.4	064	3	5.8	2.2	144	16	8.1	3.3	192	10	7.3	0.9	150	30	7.6	1.0	065	8	6.5	4.7	118
3.6 „ . . .	9	5.5	0.1	142					12	7.2	1.3	165	3	5.8	0.1	160	30	7.2	2.2	053	4	6.5	5.4	114
4.5 „ . . .	8	5.9	0.3	257					8	9.3	1.8	173					30	6.1	2.5	041	3	4.5	3.3	112
5.4 „ . . .	6	5.6	3.9	120					6	8.2	5.7	060					29	6.3	3.3	028	3	6.8	2.9	067
6.0 „ . . .	6	6.3	4.7	138					5	7.1	3.7	078					29	6.4	3.6	045	3	4.0	3.7	077
7.2 „ . . .	1	11.0	11.0	115					3	7.7	4.1	260					29	5.9	4.5	040	3	6.8	5.6	036
9.0 „ . . .									2	9.0	8.0	296					22	6.9	2.4	045				

Station	AHMEDABAD								ALLAHABAD/BAMHRAULI															
	1730*				2330				0530*				1130				1730*				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	4.6	3.8	236	30	5.1	4.1	243	29	1.3	0.4	250	30	2.0	1.0	300	30	1.6	0.5	335	30	1.0	0.2	271
0.15 a. g. . .	30	6.8	5.9	245	29	8.3	7.1	240	29	6.1	3.0	245	30	5.2	3.1	292	30	5.5	1.7	316	28	5.7	1.0	184
0.3 a. m. s. l. .	30	6.9	6.1	244	29	9.7	8.6	241	29	6.2	3.3	246	30	5.0	3.2	293	30	5.5	1.7	317	28	6.0	0.7	203
0.6 „ . . .	30	7.3	6.6	240	29	11.4	10.5	250	29	7.9	4.7	269	29	5.5	3.2	298	30	5.6	1.8	313	28	6.5	2.2	229
0.9 „ . . .	30	7.5	6.9	241	29	11.2	10.6	253	29	8.1	4.7	278	29	6.2	4.2	296	30	5.7	1.9	310	28	6.4	2.2	242
1.5 „ . . .	30	7.8	7.1	247	29	8.9	8.2	252	29	7.3	4.4	298	28	7.1	4.3	302	30	6.0	4.5	300	27	6.0	2.7	268
2.1 „ . . .	30	7.3	5.7	254	26	6.2	4.6	252	29	7.1	5.3	308	25	8.2	5.6	315	30	7.1	5.0	309	24	7.5	3.5	302
3.0 „ . . .	30	6.4	1.1	240	18	5.6	1.6	129	29	8.5	6.7	327	18	7.6	3.1	328	30	8.5	7.0	313	15	7.8	5.9	317
3.6 „ . . .	30	6.9	1.9	043					27	7.7	5.8	330	15	5.3	1.6	009	30	8.8	7.0	316	2	1.5	1.5	155
4.5 „ . . .	30	6.4	3.1	042					26	7.4	5.8	330	13	5.9	1.6	350	30	8.5	5.7	311				
5.4 „ . . .	30	5.8	2.3	047					27	6.1	3.2	327	10	6.7	1.1	313	29	8.9	6.6	310				
6.0 „ . . .	30	5.4	1.3	056					26	5.9	2.2	316	9	7.2	0.9	320	28	8.9	6.1	312				
6.2 „ . . .	30	6.1	2.5	051					25	5.8	0.6	290	4	13.0	7.1	076	27	7.7	5.5	314				
7.0 „ . . .	27	6.6	3.1	066					15	6.2	0.2	310	1	5.0	5.0	100	13	6.9	3.5	284				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	AMBALA																ANANTAPUR											
	0530				1130				1730				2330				0530				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	2.5	2.3	120	30	2.7	1.9	134	30	1.9	0.6	238	30	1.7	1.2	115	30	3.6	3.6	269	30	7.4	7.1	276				
0.15 a. g. . .	30	8.6	6.1	119	30	6.3	4.2	126	30	4.7	1.5	280	30	6.7	2.5	106	30	7.8	7.7	262	29	10.8	10.3	274				
0.3 a. m. s. l. . .	30	4.0	3.4	113	30	3.7	2.6	126	30	2.9	0.9	256	30	3.2	1.4	115												
0.6 „ . . .	30	8.6	6.1	130	30	6.6	4.3	127	30	5.3	2.0	274	30	6.6	1.9	096	30	9.5	9.4	261	29	10.5	10.1	270				
0.9 „ . . .	30	7.8	4.7	152	30	7.0	3.5	137	50	4.9	2.6	275	30	5.8	0.9	358	30	12.2	11.9	271	29	9.6	9.2	269				
1.5 „ . . .	30	5.5	1.6	227	30	7.3	1.5	217	29	6.0	5.1	283	30	5.5	3.8	306	30	14.0	13.8	284	27	10.4	10.2	271				
2.1 „ . . .	26	5.9	4.8	302	26	6.3	3.5	288	26	6.7	6.0	298	28	7.2	6.5	302	25	10.1	9.6	292	20	10.1	9.5	273				
3.0 „ . . .	23	8.8	8.4	313	18	8.2	7.2	315	21	9.6	8.6	313	23	9.4	8.5	305	18	8.6	7.0	284	5	9.2	8.3	280				
3.6 „ . . .	22	9.8	9.3	316	15	10.0	8.7	321	19	11.3	10.3	316	8	9.6	8.8	300	15	8.1	6.9	275	3	7.5	5.3	272				
4.5 „ . . .	16	9.6	8.5	318	12	10.0	8.2	323	14	9.3	8.5	314					8	5.9	3.3	268	1	4.0	4.0	230				
5.4 „ . . .	13	8.1	6.6	306	6	6.8	3.0	334	10	7.7	6.4	309					5	4.8	3.1	355	1	9.0	9.0	235				
6.0 „ . . .	13	7.2	4.8	326	5	6.5	3.3	323	8	8.7	6.9	304					3	4.0	2.9	211								
7.2 „ . . .	6	8.8	6.8	291	3	8.8	7.6	303	5	10.5	8.9	300					2	5.0	4.7	206								
9.0 „ . . .	3	7.6	7.4	303	2	10.7	6.9	251	1	9.0	9.0	300																

Station	ANANTAPUR				ASANSOL																AURANGABAD/ CHIKALTHAN							
	2330				0530				1130				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	7.1	7.0	270	30	1.2	0.6	209	15	1.4	0.5	140	30	1.7	0.8	145	30	1.6	1.1	183	30	5.5	5.2	271				
0.15 a. g. . .	27	10.9	10.7	261	27	4.7	1.6	248	14	2.7	1.0	047	28	5.4	1.8	141	29	6.5	4.3	181	28	9.5	8.7	274				
0.3 a. m. s. l. . .					27	5.3	2.1	252	14	2.9	1.0	130	28	5.6	1.7	144	29	7.0	4.7	183								
0.6 „ . . .	27	11.6	11.5	261	27	7.0	3.2	268	14	4.0	1.5	105	28	6.2	1.3	135	29	7.7	4.7	181								
0.9 „ . . .	27	13.0	12.8	266	27	7.9	3.7	281	14	4.9	0.9	064	28	5.8	0.4	158	29	7.1	2.8	198	28	11.4	10.7	278				
1.5 „ . . .	26	12.0	11.6	274	26	8.6	3.1	305	13	5.8	0.7	003	26	6.7	1.7	303	29	6.8	8.1	271	27	11.5	10.5	278				
2.1 „ . . .	23	9.0	8.1	280	23	7.1	2.6	321	5	7.8	0.7	143	23	7.1	3.1	312	29	7.1	3.2	301	24	7.9	6.2	298				
3.0 „ . . .	12	7.0	5.3	295	20	7.0	3.6	330	2	8.3	8.0	273	19	7.7	2.7	287	22	6.0	2.3	336	11	4.2	1.9	236				
3.6 „ . . .	4	6.9	3.7	279	15	6.0	2.5	317					16	6.4	0.6	336	14	5.2	1.0	026	2	3.5	1.9	123				
4.5 „ . . .					10	4.9	1.5	263					10	7.7	1.2	059	8	6.9	2.5	333								
5.4 „ . . .					9	5.1	1.6	225					6	7.2	1.5	125	3	4.7	1.4	338								
6.0 „ . . .					8	5.2	0.4	233					5	7.2	1.6	158	1	3.5	3.5	360								
7.2 „ . . .					4	5.5	1.7	236					3	4.8	2.1	347	1	3.0	3.0	060								
9.0 „ . . .					2	3.5	3.5	265					2	3.7	2.7	351												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	AURANGABAD/ CHIKALTHAN				BAHRAICH								BANGALORE															
	1730				2330				0530				1130				1730				0530@							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	6.7	5.6	275	30	6.0	5.5	274	30	0.9	0.8	092	30	1.4	0.5	104	30	0.7	0.2	106	30	3.5	3.3	265				
0.15 a. g. . .	29	8.4	6.8	276	29	10.1	9.3	266	29	6.4	4.7	107	28	4.5	2.0	116	30	3.9	1.0	084	21	7.9	7.6	262				
0.3 a. m. s. l. . .									29	6.4	4.7	119	28	4.6	2.2	120	30	4.0	1.0	089								
0.6 „ . . .									29	6.3	4.2	132	28	5.1	2.3	125	30	4.5	0.6	064								
0.9 „ . . .	29	9.0	8.0	284	29	12.2	11.4	277	29	5.5	2.4	155	27	5.3	1.1	138	30	4.6	1.2	297								
1.5 „ . . .	28	9.9	8.9	285	28	12.9	12.0	287	28	5.6	4.4	228	25	5.8	1.2	300	29	5.7	3.3	291	21	11.9	11.0	274				
2.1 „ . . .	22	9.0	7.0	293	24	9.5	8.5	295	25	6.4	3.6	297	20	7.1	3.9	317	27	7.1	2.4	339	18	13.8	12.7	287				
3.0 „ . . .	4	3.6	2.8	306	15	5.8	3.9	324	19	7.5	4.8	333	14	6.4	4.0	328	26	8.8	5.7	307	14	11.4	9.4	297				
3.6 „ . . .	3	3.8	2.0	351	6	5.2	2.1	033	14	6.6	3.8	343	11	8.3	6.4	322	19	7.0	4.3	317	12	11.3	8.8	295				
4.5 „ . . .									7	3.7	1.8	001	5	4.9	4.0	309	13	7.5	4.9	314	9	9.7	6.5	265				
5.4 „ . . .									5	4.1	1.9	018	4	6.9	4.7	302	7	6.0	3.1	303	6	6.7	5.8	282				
6.0 „ . . .									2	6.0	1.9	139	4	7.5	6.5	295	7	6.1	2.8	295	5	5.7	4.5	279				
7.2 „ . . .									2	7.3	2.3	144	2	3.7	3.5	266	7	7.3	3.3	307	4	3.5	2.3	261				
9.0 „ . . .									1	3.5	3.5	300	2	2.3	2.3	323	1	8.5	8.5	120	3	2.8	2.1	085				

Station	BANGALORE				BAREILLY				BEGAMPET																			
	1130				1730@				2330				0530				1730				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	5.3	5.1	264	30	4.5	4.1	270	30	3.8	3.7	269	30	1.4	1.2	094	30	1.5	0.1	110	30	4.9	4.4	277				
0.15 a. g. . .	29	8.2	7.8	265	30	7.7	7.1	265	29	8.3	8.0	263	25	5.9	3.1	113	25	4.2	1.0	291	28	9.2	8.7	277				
0.3 a. m. s. l. . .													25	5.3	3.1	102	25	3.6	0.7	297								
0.6 „ . . .													25	6.9	2.9	173	25	4.6	1.7	279	28	6.5	6.2	275				
0.9 „ . . .													24	6.5	2.7	191	25	4.9	2.3	276	27	13.7	12.9	294				
1.5 „ . . .	29	9.3	9.1	273	30	9.5	9.2	271	29	12.2	11.9	271	24	6.9	4.1	274	25	6.8	4.7	288	27	12.2	11.4	297				
2.1 „ . . .	20	10.0	9.7	285	29	9.6	9.2	277	26	12.0	11.7	278	23	8.1	6.8	297	24	8.8	7.5	300	27	8.9	8.0	295				
3.0 „ . . .	5	6.5	2.9	260	22	8.3	7.4	286	19	8.6	7.7	287	15	10.3	8.9	313	19	12.4	12.1	306	23	5.2	3.6	305				
3.6 „ . . .	3	6.2	3.8	315	20	8.6	7.0	283	16	8.4	7.9	281	7	11.3	8.7	326	17	11.1	10.1	313	20	4.4	2.7	293				
4.5 „ . . .	1	9.0	9.0	325	15	9.2	7.1	274	6	5.8	5.1	278	5	12.3	12.0	316	10	7.9	5.9	314	11	5.0	2.1	287				
5.4 „ . . .					12	7.5	6.7	262	1	2.0	2.0	195					9	8.1	4.9	319	3	5.8	5.3	207				
6.0 „ . . .					10	6.1	5.4	250	1	4.0	4.0	275					7	7.7	5.1	313	2	5.5	4.3	202				
7.2 „ . . .					9	4.2	3.1	255													1	10.5	10.5	100				
9.0 „ . . .					4	3.0	1.2	157																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	BEGAMPET								BHAGALPUR												BHOPAL/BAIRAGARH			
	1730				2330				0530				1130				1730				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	4.9	3.9	275	30	4.2	3.9	265	30	1.6	1.0	105	15	1.8	1.6	091	30	1.8	1.3	099	30	5.0	4.3	264
0.15 a. g. . .	28	7.6	6.9	276	27	9.8	9.0	263	29	5.2	3.3	136	15	4.1	3.2	082	28	4.4	3.1	101	30	9.4	3.2	265
0.3 a. m. s. l. . .									29	5.6	3.0	151	15	4.0	3.0	081	28	4.8	3.3	102				
0.6 „ . . .	28	6.6	5.9	277	27	6.4	5.8	250	29	6.0	2.1	165	15	4.6	3.1	087	28	5.4	2.4	109	30	8.1	7.0	264
0.9 „ . . .	28	8.1	7.5	274	27	12.5	11.9	267	28	5.7	1.5	147	15	5.3	2.7	084	28	5.9	1.0	135	30	12.6	11.4	280
1.5 „ . . .	28	8.3	7.7	283	26	10.2	9.9	275	24	5.7	1.2	077	13	6.3	1.6	086	26	6.4	1.5	277	29	11.0	9.7	290
2.1 „ . . .	28	8.8	7.8	291	21	8.2	7.5	287	23	6.4	1.7	007	7	7.2	1.8	335	24	6.4	2.0	293	28	6.8	4.6	320
3.0 „ . . .	20	6.5	4.8	287	16	4.9	3.4	307	19	6.5	1.3	356	4	8.1	7.1	295	19	7.0	2.1	309	24	5.9	3.0	009
3.6 „ . . .	16	5.5	3.7	291	9	3.6	2.6	340	17	5.3	1.2	316					19	7.1	2.2	325	20	6.3	2.6	018
4.5 „ . . .	9	4.2	2.1	291	4	4.0	1.3	339	14	4.7	0.7	095					14	5.1	2.9	073	8	8.0	3.3	149
5.4 „ . . .	4	5.7	2.9	285	1	4.0	4.0	315	10	4.7	1.9	120					12	4.7	2.3	078	4	6.0	5.6	026
6.0 „ . . .	2	5.0	4.5	244	1	4.0	4.0	345	9	4.4	2.2	127					9	4.9	3.1	086	3	4.0	3.6	360
7.2 „ . . .	1	6.0	6.0	285					7	4.6	1.4	146									2	4.7	3.8	322
9.0 „ . . .									1	12.0	12.0	215												

Station	BHOPAL/BAIRAGARH								BHUBANESHWAR															
	1730				2330				0530				1130				1730				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	5.0	2.8	259	30	3.8	2.8	249	30	2.9	1.5	234	15	4.0	2.0	262	30	5.1	2.8	207	30	3.8	3.1	234
0.15 a. g. . .	29	7.1	4.0	277	29	9.8	8.0	256	25	5.6	3.1	247	15	4.8	2.7	261	26	6.4	4.1	209	27	6.5	5.2	232
0.3 a. m. s. l. . .									25	6.9	4.6	259	15	5.2	2.7	270	26	6.7	4.1	213	27	7.4	5.6	240
0.6 „ . . .	29	7.0	4.1	271	29	8.6	6.9	248	25	7.7	5.0	262	15	5.6	3.3	273	26	6.3	3.6	241	27	7.6	5.5	242
0.9 „ . . .	29	7.4	4.8	282	29	10.7	8.6	270	25	8.7	5.8	282	12	6.2	4.8	281	26	6.5	3.5	277	26	7.2	4.9	250
1.5 „ . . .	29	8.2	5.8	287	28	10.2	7.9	280	24	7.3	4.9	275	10	6.7	5.3	288	21	5.9	3.9	318	24	5.6	2.8	293
2.1 „ . . .	29	8.0	5.8	296	28	7.3	4.6	242	20	6.5	3.7	299	2	4.3	3.7	315	15	6.0	3.8	314	19	5.3	3.4	316
3.0 „ . . .	21	7.6	4.8	324	23	5.7	3.7	003	15	7.2	2.4	297					10	7.5	4.8	307	14	5.2	2.8	310
3.6 „ . . .	17	7.0	3.9	339	5	5.9	5.7	006	9	5.8	3.2	307					6	5.1	1.5	289				
4.5 „ . . .	10	4.1	1.9	329					7	5.3	1.2	348					4	5.5	2.7	090				
5.4 „ . . .	8	5.0	2.1	286					5	6.0	2.0	207					1	7.0	7.0	135				
6.0 „ . . .	8	5.3	2.1	300					5	7.7	0.5	271					1	7.0	7.0	115				
7.2 „ . . .	6	6.1	4.3	003					1	4.0	4.0	045					1	7.5	7.5	115				
9.0 „ . . .	5	4.9	3.1	058					1	9.5	9.5	115												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaishta 11—Asadha 9, 1885 Saka)

Station	BHUIJ/RUDRAMATA												BIKANER											
	0530				1730				2330				0530				1730				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	5.1	4.8	237	30	7.3	7.0	235	30	6.5	6.4	237	30	3.1	2.9	225	30	2.8	2.4	223	30	2.6	2.4	216
0.15 a. g.	30	7.1	6.8	240	30	10.3	10.0	239	30	9.0	8.9	235	30	10.9	10.5	239	30	7.0	5.8	238	30	12.0	10.8	220
0.3 a.m.s.l.	30	8.3	8.0	242	30	9.8	9.5	233	30	9.7	9.5	235	30	8.3	8.0	237	30	6.4	5.0	234	30	8.3	7.5	215
0.6 "	30	11.2	10.9	242	30	9.8	9.5	241	30	11.3	11.1	239	30	14.1	13.7	241	30	8.3	7.0	239	30	13.4	12.5	226
0.9 "	28	11.5	11.0	245	28	9.2	8.6	243	29	10.8	10.3	238	27	14.3	13.7	243	27	7.9	6.5	242	29	13.8	11.8	235
1.5 "	25	10.1	7.5	234	23	6.6	4.7	238	26	7.2	4.3	231	25	10.2	8.8	255	20	7.3	6.3	246	18	7.5	6.0	255
2.1 "	23	8.5	4.3	224	18	5.0	1.6	207	23	5.9	1.6	178	20	5.8	4.4	285	17	7.2	6.4	249	16	5.8	4.7	270
3.0 "	17	6.5	2.9	095	17	6.3	3.2	098	19	5.1	2.8	066	18	4.6	2.1	338	13	5.8	3.7	284	9	5.7	4.5	332
3.6 "	16	7.4	4.0	085	17	7.3	5.2	078	18	5.7	4.0	057	15	4.4	1.7	354	11	5.5	3.3	346	3	7.5	6.3	350
4.5 "	12	8.2	6.4	056	17	7.8	5.3	071	13	7.1	5.2	034	14	7.0	5.9	358	11	7.5	4.4	002				
5.4 "	10	7.5	7.0	043	16	5.7	4.3	054	8	7.4	6.6	053	14	8.0	5.4	359	10	6.3	4.5	010				
6.0 "	10	7.9	7.6	052	16	5.9	4.1	047	3	7.0	6.2	030	14	8.4	5.4	009	9	6.2	5.9	013				
7.2 "	10	7.1	5.8	054	12	6.2	3.9	036					11	7.7	3.6	330	4	5.5	4.5	029				
9.0 "	8	6.6	5.7	058	9	7.2	6.0	055					7	8.2	4.8	351	1	2.0	2.0	220				

Station	BOMBAY/SANTACRUZ												CALCUTTA/DUM DUM											
	0530*				1130				1730*				2330				0530*			1130				
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.5	1.9	242	30	3.9	2.9	236	30	5.2	4.3	255	30	3.2	2.5	243	30	1.5	0.8	194	30	2.1	1.0	181
1.15 a. g.	30	5.5	3.9	249	29	6.3	5.5	236	29	7.9	6.5	264	25	5.9	5.2	232	30	6.0	3.5	212	27	5.1	2.4	178
0.3 a.m.s.l.	30	5.3	3.9	247	29	6.5	5.8	238	29	6.7	5.8	257	25	6.4	5.8	234	30	6.6	3.7	220	27	5.5	2.3	189
0.6 "	30	6.1	4.7	250	29	7.6	7.0	244	29	6.7	5.9	257	25	7.5	6.7	242	30	7.7	4.1	240	25	5.9	2.0	203
0.9 "	30	6.9	5.7	254	23	8.2	7.4	249	29	7.3	6.9	264	23	8.0	7.7	255	30	7.9	3.6	251	25	6.5	1.8	247
1.5 "	30	7.5	6.5	257	12	5.5	4.7	247	29	6.7	5.9	256	18	8.7	8.6	255	30	6.8	2.7	254	20	7.7	1.6	280
2.1 "	30	6.5	5.4	265	5	4.8	3.5	220	29	6.4	4.5	253	14	7.4	6.7	252	30	6.5	2.5	282	11	6.4	2.4	281
3.0 "	30	5.6	2.4	268	2	3.0	2.9	148	29	5.6	3.0	265	9	4.6	1.6	257	30	6.1	2.7	300	6	5.3	2.6	288
3.6 "	30	5.5	0.7	319	1	3.0	3.0	105	29	5.4	1.0	298	4	4.3	2.3	096	30	6.3	2.9	305	3	5.3	1.0	352
4.5 "	30	4.2	1.6	056					29	4.5	1.4	058	4	4.1	3.5	112	30	7.1	3.0	298				
5.4 "	30	4.5	0.3	265					29	4.8	0.5	350	3	3.8	1.8	102	30	6.6	2.9	282				
6.0 "	30	5.2	1.0	099					29	4.1	0.7	085	2	4.0	2.1	113	28	5.7	1.7	237				
7.2 "	30	5.4	2.1	076					28	4.1	1.5	081					28	5.8	0.7	173				
9.0 "	27	6.5	4.2	078					25	6.4	4.8	087					26	5.7	1.4	076				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaishta 11—Asadha 9, 1885 Saka)

Station	CALCUTTA/DUMDUM								COCHIN/WILLINGDON†												DEHRADUN							
	1730*				2330				0530				1730				2330				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.1	1.4	173	30	2.0	1.4	179	30	0.9	0.1	084	30	2.4	2.1	290	30	0.9	0.4	006	30	0.8	0.4	062				
0.15 a.g.	30	5.5	3.5	190	28	6.2	4.4	186	27	3.1	1.3	306	25	4.3	3.9	291	19	3.0	1.7	296	27	2.3	0.9	084				
0.3 a.m.s.l.	30	5.8	3.5	195	28	7.4	5.5	195	27	3.9	3.0	290	25	5.9	5.6	294	19	3.9	3.3	292								
0.6 "	30	6.3	3.1	162	26	7.4	5.6	199	27	6.1	5.7	287	25	8.5	8.2	295	19	5.9	5.5	291								
0.9 "	30	9.5	1.9	212	25	6.2	4.0	198	27	7.9	7.6	289	25	9.4	9.1	296	19	7.6	7.2	292	27	2.7	1.0	102				
1.5 "	30	6.3	2.1	259	23	5.6	2.0	202	24	8.3	8.2	290	25	9.5	9.2	295	14	8.9	8.6	289	26	3.2	1.3	243				
2.1 "	30	6.2	2.9	314	21	6.2	1.1	231	20	9.6	9.5	288	23	9.4	9.3	290	9	7.8	7.7	281	25	4.6	2.9	272				
3.0 "	30	6.6	2.7	292	12	4.6	0.7	107	11	9.7	9.5	283	16	8.7	8.5	283	4	5.5	4.9	276	16	7.0	6.1	303				
3.6 "	30	7.2	3.2	301	4	5.6	3.6	084	7	7.6	7.3	274	11	9.4	8.7	279	1	7.0	7.0	280	10	8.7	7.7	330				
4.5 "	30	7.5	3.5	304					1	11.5	11.5	275	2	2.7	2.3	223					4	7.3	4.7	327				
5.4 "	30	7.5	2.6	310																	1	3.5	3.5	355				
6.0 "	30	7.2	2.6	289																								
7.2 "	30	6.7	1.4	252																								
9.0 "	26	6.3	1.6	333																								

Station	DEHRADUN				DIBRUGARH/MOHANBARI												GADAG							
	1730				0530				1130				1730				2330				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.6	0.2	341	30	0.5	0.7	053	30	0.9	0.7	044	30	1.1	0.5	050	30	1.0	1.0	048	30	4.1	3.7	245
0.15 a.g.	28	2.2	0.6	276	19	3.9	2.9	060	25	3.2	1.8	044	26	4.1	2.2	063	24	4.5	3.2	054	30	9.1	8.8	251
0.3 a.m.s.l.					19	4.2	3.2	060	25	2.9	1.7	049	26	4.2	2.2	065	24	4.5	2.8	038				
0.6 "					18	4.1	2.3	061	24	3.2	1.3	069	26	3.9	1.8	081	24	3.8	2.2	062				
0.9 "	28	2.1	0.8	260	17	3.2	0.5	167	23	3.5	0.5	058	22	3.3	0.8	100	22	3.7	1.5	091	30	11.1	10.5	269
1.5 "	28	3.4	2.8	265	15	3.1	0.6	254	18	2.9	0.9	188	22	3.6	1.9	206	21	3.3	1.8	199	23	13.2	12.5	278
2.1 "	27	5.3	4.9	280	12	3.0	0.8	242	11	3.3	1.8	201	18	3.8	2.4	194	13	4.0	3.3	202	20	10.9	10.5	287
3.0 "	23	7.4	6.7	305	8	2.9	1.6	278	6	2.7	1.3	150	15	4.2	2.6	199	10	4.0	3.2	209	18	8.6	7.6	285
3.6 "	17	6.9	6.1	309	2	3.7	3.5	322	3	3.5	1.6	246	13	4.6	3.5	181	4	5.5	4.9	192	15	8.0	6.4	281
4.5 "	14	6.4	5.6	319					1	1.5	1.5	345	8	3.0	1.5	139					8	7.0	6.0	289
5.4 "	12	5.9	4.0	318					1	4.0	4.0	125	7	3.6	1.0	031					6	4.6	3.6	286
6.0 "	9	6.0	4.7	302					1	5.5	5.5	100	3	4.3	2.6	194					5	4.9	4.3	293
7.2 "	7	5.5	3.6	298					1	7.5	7.5	050									3	3.0	1.9	113
9.0 "	4	7.4	6.6	273																	1	7.5	7.5	080

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June 1963 (Jyaishta 11—Asadha 9, 1885 Saka)

Station	GADAG								GANGTOK								GAUHATI							
	1730				2330				0530				1730				0530*				1130			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	6.0	5.7	261	30	4.5	4.1	253	30	0.3	0.3	360	30	CALM			30	0.7	0.6	060	30	2.2	1.5	045
0.15 a.g.	29	11.7	11.6	254	30	9.7	9.5	253	12	2.9	1.5	027	10	1.9	1.3	176	30	3.4	2.2	066	26	3.8	2.3	032
0.3 a.m.s.l.																	30	3.8	2.2	068	26	3.8	1.8	042
0.6 "																	30	4.5	2.0	082	26	4.2	0.9	057
0.9 "	29	12.0	11.8	259	30	11.1	10.9	263									30	4.6	0.4	170	25	4.4	0.9	162
1.5 "	28	13.1	12.7	269	30	13.7	13.3	273									30	5.8	1.7	230	22	5.1	1.9	195
2.1 "	21	10.6	10.3	280	28	11.1	10.5	278	12	2.0	1.3	007	10	2.1	1.4	192	30	6.3	2.0	219	20	5.4	1.5	175
3.0 "	16	8.4	7.5	287	24	7.8	6.4	282	11	1.5	0.9	279	9	1.5	0.5	278	30	6.2	2.3	233	12	4.8	1.4	166
3.6 "	12	7.1	6.0	280	19	7.6	5.4	276	8	2.9	1.4	114	9	1.9	0.6	048	30	6.9	3.4	224	9	4.9	2.7	325
4.5 "	10	7.3	6.3	273	10	5.9	3.0	260	8	4.1	2.5	130	4	4.3	2.9	126	30	6.7	2.6	200	7	3.5	1.1	067
5.4 "	5	6.4	4.2	264	6	5.2	4.4	276	6	3.6	2.4	178	3	3.3	2.9	101	30	6.6	2.7	197	6	2.6	1.1	086
6.0 "	5	3.5	2.4	258	5	4.6	3.4	290	6	4.6	2.3	216	3	3.7	2.8	093	30	6.8	3.6	214	6	3.4	0.8	067
7.2 "	3	4.3	3.9	308	3	5.7	3.7	025	6	6.5	1.8	214	1	3.5	3.5	220	28	6.5	2.5	234	5	6.1	3.1	081
9.0 "	2	5.7	5.7	038	2	5.7	3.8	070	5	6.9	1.2	318					22	6.7	2.8	239	4	7.3	1.5	137

Station	GAUHATI								GAYA															
	1730*				2330				0530				1130				1730				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.3	0.4	059	30	1.3	0.5	057	30	1.7	0.7	190	15	2.6	0.1	045	30	2.9	0.2	074	30	1.5	1.1	137
0.15 a.g.	30	3.3	1.0	040	27	3.1	0.4	162	29	5.0	2.3	260	15	4.6	0.5	016	29	5.1	0.7	276	30	4.7	2.5	157
0.3 a.m.s.l.	30	3.7	1.0	049	27	3.3	0.1	220	29	5.2	2.4	210	15	4.9	0.5	038	29	5.1	0.7	280	30	4.7	2.6	160
0.6 "	30	4.6	0.9	084	27	3.6	0.2	024	29	6.0	2.9	232	15	4.8	0.8	025	29	5.1	1.2	318	29	5.8	2.6	165
0.9 "	30	5.5	1.1	200	25	4.2	1.3	246	29	6.4	2.9	251	15	4.8	1.1	027	28	4.9	1.3	324	29	6.2	1.9	182
1.5 "	30	6.7	3.7	217	22	5.0	3.0	237	29	6.3	3.0	289	13	6.5	1.4	356	28	6.0	2.2	328	28	5.5	1.7	246
2.1 "	30	6.8	3.6	215	19	4.2	1.5	227	25	5.2	1.9	337	12	7.0	1.2	290	27	6.3	2.6	330	26	5.8	2.5	278
3.0 "	30	7.3	3.3	217	18	4.6	2.0	198	19	5.7	2.6	338	9	6.1	1.5	246	20	7.3	3.7	307	20	6.6	4.1	319
3.6 "	30	7.1	2.9	218	12	5.4	2.0	161	14	4.7	2.0	344					13	6.6	3.8	301	6	4.2	2.7	020
4.5 "	30	6.8	2.2	219	9	6.0	2.5	145	11	4.0	1.2	317					8	7.2	2.6	320	3	2.2	2.0	098
5.4 "	29	6.6	1.7	204	6	5.9	0.9	142	9	3.7	1.6	168					8	8.8	3.0	323	1	3.0	3.0	115
6.0 "	29	6.4	2.3	210	6	5.9	0.4	231	8	3.4	1.3	215					4	4.4	1.3	320				
7.2 "	27	6.9	2.9	214	3	8.3	2.7	196	3	4.3	3.1	132					2	1.5	0.5	195				
9.0 "	23	5.3	3.6	257	1	11.0	11.0	250	3	3.3	2.8	141					1	5.5	5.5	170				

TABLE IV.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June 1963 (Jyaishta 11—Asadha 9, 1885 Saka)

Station	GOPALPUR												GORAKHPUR								GWALIOR											
	0530				1730				2330				0530				1730				0530											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.7	2.2	216	30	5.6	5.3	201	30	3.7	2.9	214	30	1.1	0.7	066	30	0.8	0.2	360	30	3.0	2.2	244								
0.15 a.g.	30	6.5	4.9	228	29	9.1	7.4	208	27	6.8	5.5	223	28	6.0	4.4	090	29	3.2	1.0	004	30	7.8	5.3	245								
0.3 a.m.s.l.	30	6.5	4.7	254	29	8.3	6.2	218	27	6.6	5.5	230	28	6.5	4.3	107	29	3.6	1.0	003	30	6.4	4.3	243								
0.6 "	30	6.9	4.9	262	29	6.1	4.0	231	27	6.0	4.8	246	28	5.8	3.1	133	29	3.9	1.0	337	30	9.6	7.7	265								
0.9 "	28	7.3	5.5	274	28	5.5	3.4	265	25	5.4	4.7	267	28	5.3	1.5	170	28	3.7	0.8	312	30	9.9	8.5	279								
1.5 "	28	8.1	6.2	298	28	6.2	4.4	301	25	5.4	4.3	289	28	6.7	2.4	268	27	5.9	2.9	275	29	9.8	8.5	297								
2.1 "	27	7.2	5.9	300	27	7.3	4.9	306	22	5.9	4.3	299	23	6.8	3.3	288	27	6.8	4.3	282	25	8.3	7.2	319								
3.0 "	20	6.9	5.8	285	19	7.1	4.5	293	14	6.2	4.3	319	19	5.7	1.5	306	25	7.5	4.9	295	20	8.2	7.2	343								
3.6 "	13	6.3	4.3	287	13	6.1	3.0	288	3	6.7	6.5	301	16	4.8	2.2	312	24	7.4	4.4	293	12	8.9	8.5	349								
4.5 "	7	6.2	3.9	260	8	5.6	0.1	051	1	3.5	3.5	360	12	4.0	1.4	360	21	6.9	4.0	290	8	7.1	5.9	355								
5.4 "	2	4.0	1.5	114	6	5.2	3.0	100	1	4.0	4.0	030	9	5.2	0.9	262	21	6.0	3.4	290	8	5.5	4.4	342								
6.0 "	2	6.3	3.0	124	5	7.3	1.9	033	1	5.0	5.0	075	5	4.4	1.2	245	18	6.0	2.5	305	7	6.1	3.7	003								
7.2 "	1	6.0	6.0	095	3	5.2	1.7	002					4	4.0	2.3	248	16	6.3	4.2	298	6	6.1	4.3	345								
9.0 "					2	5.3	3.5	050									10	6.7	2.2	321	3	5.7	2.4	042								

Station	GWALIOR												IMPHAL/TULIHAL															
	1130				1730				2330				0530				1130				1730							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	4.3	3.3	284	30	2.7	1.5	291	30	2.9	1.6	192	30	1.0	0.6	041	30	2.5	1.1	160	30	2.7	0.5	252				
1.15 a.g.	30	7.4	5.0	290	30	5.9	3.6	280	30	6.7	3.5	214	24	2.5	1.2	069	27	3.1	0.9	155	26	4.0	1.1	244				
0.3 a.m.s.l.	30	6.6	4.6	290	30	5.5	3.0	284	30	5.6	3.1	244																
0.6 "	30	7.4	5.3	292	30	6.5	4.2	289	30	7.7	3.5	233	24	2.5	1.3	065	27	3.3	0.9	156	26	4.0	1.3	237				
0.9 "	30	7.9	5.6	299	30	6.5	3.7	290	30	7.4	4.4	253	24	4.0	0.8	231	25	4.6	2.6	195	25	4.5	2.0	208				
1.5 "	28	8.7	6.4	309	29	6.9	4.2	294	28	7.7	5.5	284	23	5.2	2.3	242	16	6.6	3.5	239	22	5.7	2.4	221				
2.1 "	25	8.7	5.9	313	27	7.3	4.8	298	27	8.0	6.1	301	12	6.3	2.6	162	9	6.2	0.8	186	12	5.0	0.8	107				
3.0 "	18	7.8	4.7	326	22	8.5	6.3	304	23	6.8	5.2	328	7	5.9	2.5	162	5	5.7	2.9	120	7	4.5	1.0	187				
3.6 "	13	9.3	8.0	315	18	9.9	8.0	312	7	7.6	7.4	357	4	7.7	4.5	177	1	3.0	3.0	210								
4.5 "	13	9.1	7.0	319	12	11.8	9.3	317					1	10.0	10.0	120	1	3.0	3.0	220								
5.4 "	11	8.8	6.5	313	11	9.5	8.1	318																				
6.0 "	8	8.9	8.0	319	8	9.6	6.8	306									1	1.5	1.5	020								
7.2 "	6	11.2	10.3	313	6	9.3	7.2	303									1	3.5	3.5	080								
9.0 "	2	7.7	6.9	307	5	7.2	5.0	315																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR															
	1730				0530				1730				2330				0530*				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.3	0.8	161	30	1.9	1.1	206	30	2.9	1.3	216	30	2.2	1.2	196	30	5.4	5.3	241	30	6.0	5.9	228				
0.15 a.g.	26	6.0	1.8	190	27	5.0	2.8	226	30	5.3	1.5	227	25	5.9	3.8	213	29	8.8	8.5	240	28	8.6	8.4	231				
0.3 a.m.s.l.	26	6.0	1.7	188	27	4.3	2.5	226	30	4.9	2.1	234	25	4.5	3.0	205	29	7.4	7.2	240	28	7.4	7.1	234				
0.6 "	26	5.7	1.6	223	27	6.3	4.9	262	30	5.8	2.6	266	25	7.1	4.8	231	29	10.8	10.6	236	28	9.7	8.7	230				
0.9 "	24	5.3	0.7	259	27	7.5	5.7	270	29	5.9	3.3	278	25	8.0	5.6	247	28	11.3	10.9	232	28	8.4	7.0	230				
1.5 "	24	6.8	3.1	225	24	7.8	6.2	288	27	6.7	4.6	314	24	7.0	4.8	277	28	9.7	9.5	233	25	7.2	6.8	241				
2.1 "	9	7.8	3.2	022	22	6.4	4.5	304	26	7.2	4.7	332	23	6.0	3.5	309	27	5.3	3.0	254	22	5.8	3.1	245				
3.0 "	3	5.0	2.1	050	21	6.1	4.2	336	18	6.4	4.1	336	13	4.8	2.0	334	27	5.1	1.9	358	17	5.4	0.6	254				
3.6 "	2	6.7	6.7	090	16	5.8	3.3	341	14	4.7	2.2	337	3	1.8	0.6	028	26	5.3	3.2	004	15	5.3	1.8	070				
4.5 "	2	4.5	4.5	070	13	5.1	2.8	322	12	5.4	3.3	312					25	7.1	5.8	023	12	7.1	3.5	053				
5.4 "	1	6.5	6.5	080	11	3.0	0.5	067	7	5.4	2.9	301					25	6.7	5.6	025	12	7.1	4.7	050				
6.0 "	1	6.5	6.5	080	6	2.9	0.7	078	5	6.1	1.6	268					25	6.5	3.8	015	10	7.3	4.9	031				
7.2 "					2	6.0	5.5	079	1	4.0	4.0	170					23	6.7	2.8	012	8	9.9	6.9	036				
9.0 "																	21	8.0	4.1	309	5	8.0	5.4	343				

Station	JODHPUR				LUCKNOW/AMAUSI								MADRAS/MINAMBAKKAM															
	1730*				2330				0530				1730				2330				0530*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	6.4	6.0	238	30	4.8	4.2	227	30	2.5	1.1	115	30	3.6	1.3	340	30	2.6	1.4	126	30	4.4	4.0	268				
0.15 a.g.	30	8.2	7.3	248	30	10.4	9.5	232	30	5.4	1.1	161	30	4.2	1.4	319	30	6.7	3.2	136	30	7.2	5.9	275				
0.3 a.m.s.l.	30	7.2	6.3	244	30	9.0	8.3	231	30	5.7	1.3	170	30	4.5	1.3	329	30	6.8	3.0	138	30	8.8	8.3	274				
0.6 "	30	8.7	7.9	240	30	11.9	11.2	233	30	6.8	1.8	229	29	4.8	0.8	313	30	6.3	2.4	174	30	11.5	10.9	278				
0.9 "	30	9.3	8.7	237	28	12.1	11.2	234	29	6.7	2.8	251	29	5.0	1.6	290	30	6.0	2.5	234	30	11.5	10.9	287				
1.5 "	30	8.7	8.5	235	20	10.7	9.1	240	27	6.0	3.2	288	25	6.0	3.4	301	30	6.2	3.3	277	30	10.5	9.8	289				
2.1 "	29	6.5	5.1	242	12	6.0	2.9	250	24	7.3	5.1	306	23	6.8	5.2	307	23	6.1	4.1	321	30	8.7	8.0	283				
3.0 "	29	5.0	2.3	291	6	3.2	1.6	004	19	9.3	6.2	332	17	9.1	8.2	312	16	6.1	5.2	314	30	9.1	8.3	280				
3.6 "	29	5.3	2.7	330	2	4.0	3.7	018	11	7.2	3.8	341	15	9.7	7.7	319	2	5.0	2.6	013	30	9.0	7.9	276				
4.5 "	29	6.4	4.1	355	1	7.0	7.0	080	7	6.5	3.8	315	29	8.7	7.2	317	1	8.5	8.5	110	30	8.5	7.1	275				
5.4 "	28	7.4	4.0	009					4	4.6	4.1	267	8	8.3	8.1	328	1	9.0	9.0	110	30	7.6	6.1	264				
6.0 "	28	7.0	3.0	348					3	3.0	2.5	265	6	7.7	6.4	320					30	6.7	5.3	260				
7.2 "	26	8.4	3.9	341					1	4.5	4.5	330	4	6.9	5.2	320					30	5.7	2.6	250				
9.0 "	20	7.8	3.1	338					1	3.5	3.5	345	4	7.6	6.8	265					30	5.3	2.8	073				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE																			
	1130				1730*				2330				0530*				1730				2330*											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	4.7	4.6	275	30	5.6	2.6	190	30	4.6	4.1	197	30	1.7	1.1	093	30	3.2	2.4	278	30	1.6	0.4	248								
0.15 a.g.	30	6.9	6.6	279	30	6.0	2.9	190	30	9.7	8.3	205	24	4.6	0.9	171	29	5.8	4.8	274	29	4.2	2.4	252								
0.3 a. m. s.l.	30	7.3	7.0	278	30	5.9	3.5	210	30	10.7	9.5	215	24	4.6	1.9	226	29	5.8	4.8	275	29	4.4	3.3	259								
0.6 "	30	8.0	7.7	274	30	5.9	4.4	241	30	11.2	9.9	230	23	6.3	5.4	267	29	7.5	6.8	287	27	6.3	5.7	268								
0.9 "	30	9.1	8.7	275	30	6.6	5.8	255	30	11.0	10.1	243	22	8.0	7.2	278	26	8.7	8.2	282	26	8.3	7.8	278								
1.5 "	30	10.4	9.7	280	30	8.2	7.9	274	29	10.4	9.8	262	14	9.5	9.0	280	19	9.0	8.1	290	23	9.7	8.9	283								
2.1 "	28	10.4	9.5	277	30	9.3	9.0	282	27	10.6	9.8	275	12	10.0	9.8	282	10	8.8	7.9	290	15	9.6	9.2	289								
3.0 "	26	8.6	7.8	277	30	10.7	10.1	284	25	9.5	8.5	293	9	9.9	8.7	277	6	7.7	6.7	291	9	8.7	8.5	282								
3.6 "	26	9.0	8.3	280	30	10.2	9.5	283	10	8.0	7.3	290	6	9.5	7.6	275	6	8.8	6.5	305	5	8.3	7.9	266								
4.5 "	22	8.9	7.7	274	30	8.9	7.9	281	1	5.0	5.0	130	4	8.3	6.3	271	5	10.7	7.2	306	1	4.0	4.0	110								
5.4 "	21	8.8	6.9	263	30	8.4	7.3	278					3	8.2	6.9	249	2	6.3	5.7	281												
6.0 "	19	7.8	6.0	262	30	8.3	6.8	275					2	11.0	10.5	259	2	6.3	5.1	307												
7.2 "	9	5.2	3.3	227	30	5.3	2.6	262					2	12.5	12.5	263																
9.0 "	2	4.0	3.9	098	30	6.4	2.2	055																								

Station	MINICOY												NAGPUR/SONEGAON																			
	0530				1730*				2330				0530*				1130				1730*											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	3.9	3.6	274	30	5.9	5.2	278	30	4.2	3.8	278	30	1.5	1.0	284	30	4.2	3.1	305	29	3.9	2.3	285								
0.15 a.g.	28	6.8	6.1	270	30	8.3	7.5	276	29	6.4	5.8	272	30	7.3	5.7	275	29	6.1	5.2	300	29	7.7	4.8	288								
0.3 a.m. s.l.	28	7.3	6.9	273	30	8.3	7.6	281	29	6.7	6.2	274																				
0.6 "	28	8.3	7.9	273	30	8.7	7.9	289	29	8.1	7.8	278	30	8.8	8.4	303	29	5.8	4.6	299	29	7.5	4.7	284								
0.9 "	28	8.8	8.6	279	30	9.6	9.1	290	29	8.7	8.3	282	30	10.1	8.5	299	28	6.3	5.4	308	29	7.0	4.4	291								
1.5 "	27	8.4	8.2	286	30	10.0	9.7	293	28	8.7	8.4	287	30	9.4	7.1	311	25	6.7	6.1	321	29	6.2	3.9	295								
2.1 "	25	8.0	7.6	283	30	9.7	9.5	292	26	8.8	8.5	284	30	7.7	5.6	318	22	6.5	4.5	331	29	6.2	3.9	311								
3.0 "	21	8.4	7.6	271	30	9.5	8.7	286	17	7.2	6.2	280	30	6.7	3.7	360	18	7.1	4.0	003	29	6.4	3.9	322								
3.6 "	19	7.3	5.8	270	30	10.4	8.9	287	13	6.2	4.3	279	30	7.9	4.8	022	13	6.6	2.8	021	29	7.2	4.2	342								
4.5 "	14	5.5	2.9	265	30	9.1	8.0	284	5	4.3	2.3	248	30	6.7	3.0	021	11	5.7	3.2	343	29	6.4	3.7	344								
5.4 "	13	4.7	2.3	276	30	8.7	7.3	285	3	4.8	1.7	243	30	6.5	2.6	016	7	5.9	3.9	315	29	6.7	4.3	334								
6.0 "	12	5.0	0.7	312	30	7.2	5.0	284	2	2.5	1.7	059	30	6.3	2.1	036	5	7.4	5.1	317	29	5.6	2.8	331								
7.2 "	8	6.5	4.1	076	30	6.2	1.3	218					30	6.8	2.9	040	3	7.0	3.8	335	29	5.4	2.9	342								
9.0 "	3	17.2	17.0	082	29	8.9	6.5	090					29	6.5	3.0	058	2	3.7	3.6	087	29	6.0	2.4	050								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	NAGPUR/ SONEGAON				NEW DELHI/SAFDARJUNG																POONA			
	2330				0530*				1130				1730*				2230				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.2	1.1	245	30	2.2	0.9	244	30	5.2	1.9	282	30	3.0	0.7	320	30	3.1	0.7	120	30	0.8	0.7	266
0.15 a.g.	29	6.2	3.7	249	30	6.7	2.6	210	24	5.5	2.4	290	30	5.7	2.4	304	28	7.1	2.8	203	30	6.7	6.5	259
0.3 a.m.s.l.					30	5.8	2.4	235	24	4.9	2.1	294	30	4.7	1.3	315	28	5.8	1.9	175				
0.6 "	29	6.5	4.1	262	30	7.1	3.0	235	23	6.1	3.4	284	30	5.9	2.0	305	28	7.1	2.6	210	30	3.4	3.4	259
0.9 "	29	6.4	4.3	271	29	8.5	5.5	253	21	7.1	4.3	290	30	6.0	3.1	300	28	6.8	2.6	242	30	8.5	8.2	264
1.5 "	28	6.5	4.4	302	29	9.5	7.3	280	16	4.9	3.3	290	30	6.5	4.7	291	24	6.3	4.2	281	27	10.3	9.6	292
2.1 "	25	6.1	3.8	319	29	8.3	6.8	298	12	5.3	3.8	305	30	7.8	6.9	290	17	8.2	6.7	303	22	7.7	6.4	278
3.0 "	15	5.6	4.1	021	30	8.9	8.0	310	8	5.6	3.6	310	30	9.7	8.4	300	11	10.1	7.6	297	19	3.4	1.2	305
3.6 "	9	4.4	3.2	022	30	10.2	8.8	322	6	5.1	2.9	350	30	9.8	8.7	303					16	3.3	0.2	034
4.5 "	3	5.3	4.9	015	30	9.0	7.8	326	5	7.7	4.9	356	30	10.0	8.8	312					9	3.9	0.4	045
5.4 "	1	3.5	3.5	060	29	7.8	6.6	320	3	5.7	1.2	357	30	9.3	7.8	309					1	2.0	2.0	225
6.0 "	1	4.0	4.0	110	29	7.0	4.7	311	3	4.7	0.5	163	30	8.5	6.3	308					1	2.0	2.0	245
7.2 "					29	7.9	4.4	290	3	5.2	1.3	180	30	8.7	6.5	306					1	1.0	1.0	330
9.0 "					26	9.0	5.7	296	2	4.2	0.4	027	28	8.9	6.8	295					1	4.0	4.0	050

Station	POONA								PORT BLAIR															
	1730				2330				0530*				1130				1730*				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.1	2.1	266	30	1.2	1.1	265	30	5.5	5.1	240	30	7.4	7.1	235	30	5.9	5.6	234	30	4.8	4.6	233
0.15 a.g.	29	8.4	8.0	260	29	7.1	6.9	258	30	9.6	9.1	241	30	9.8	9.3	235	29	9.7	9.2	235	27	8.4	8.1	238
0.3 a.m.s.l.									30	10.0	9.4	241	30	9.9	9.5	234	29	10.1	9.6	235	27	9.6	9.1	238
0.6 "	29	6.2	5.9	261	29	3.7	3.6	259	29	11.7	10.9	248	29	10.7	10.1	241	29	12.6	12.3	244	26	11.6	11.3	244
0.9 "	29	9.2	8.9	260	29	8.7	8.4	260	29	13.1	12.0	252	22	10.9	10.5	243	29	13.8	13.6	249	21	11.7	11.4	249
1.5 "	29	9.3	8.9	268	27	11.2	10.8	271	29	13.2	11.3	256	12	9.5	9.0	248	29	12.2	11.4	258	9	9.3	9.0	248
2.1 "	19	7.9	7.2	272	17	6.8	6.2	271	29	11.4	10.6	260	5	7.6	7.1	271	29	10.9	10.5	259	5	6.2	5.9	251
3.0 "	10	5.6	2.2	252	15	4.0	2.0	207	28	11.1	10.6	256	4	9.4	9.1	273	29	10.2	9.5	254	4	4.0	3.5	252
3.6 "	7	4.3	0.6	159	14	4.1	1.7	163	27	10.1	9.1	255	2	11.5	11.5	271	29	10.8	9.7	254				
4.5 "	4	3.6	3.5	100	6	3.9	0.2	184	28	9.3	7.8	256					28	9.8	8.2	254				
5.4 "	3	3.5	2.4	092	1	2.0	2.0	090	27	9.4	7.0	260					26	8.5	5.5	253				
6.0 "	3	3.8	2.6	109					27	8.5	4.9	252					26	7.9	4.7	256				
7.2 "									26	7.0	2.8	246					24	6.3	2.1	267				
9.0 "									23	10.0	7.3	088					18	9.5	8.2	073				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	RAIPUR												RAXAUL											
	0530				1730				2330				0530				1130				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.5	1.9	237	30	3.5	1.9	234	30	3.1	2.0	221	30	1.3	1.3	090	15	1.4	1.1	084	30	1.4	0.4	101
0.15 a.g.	30	8.2	6.3	244	29	7.1	4.3	254	27	8.5	5.7	231	28	6.4	6.3	098	14	4.2	2.6	108	30	4.8	1.4	308
0.3 a.m.s.l.													28	7.0	6.8	106	14	3.9	2.6	107	30	4.8	1.4	059
0.6 "	30	9.3	7.7	258	29	7.6	4.8	258	27	9.2	6.1	238	27	6.7	6.1	121	14	4.1	2.9	109	30	3.8	1.0	098
0.9 "	29	9.6	7.6	265	29	7.9	5.1	270	27	8.4	5.5	248	27	6.3	4.8	133	12	3.6	2.2	129	30	3.9	0.8	144
1.5 "	28	7.8	5.9	291	29	7.3	5.0	297	26	6.3	3.5	291	26	5.7	1.7	154	6	3.7	0.6	144	29	4.4	0.8	219
2.1 "	25	7.1	5.7	313	25	6.5	4.9	312	26	5.3	3.0	310	20	6.5	0.7	258	4	4.8	3.2	289	28	5.3	2.3	267
3.0 "	22	6.5	4.1	343	22	8.0	4.5	329	23	5.0	2.3	338	14	4.9	1.5	287	1	7.5	7.5	270	19	5.4	3.1	273
3.6 "	16	6.9	4.5	006	18	7.6	4.7	328	10	5.8	3.5	012	13	4.9	1.2	325					18	5.9	3.0	274
4.5 "	14	6.1	3.5	023	8	7.5	2.7	021	1	3.5	3.5	130	7	5.8	0.3	034					10	5.5	2.7	271
5.4 "	7	6.8	5.4	065	4	8.1	2.8	065					5	5.2	1.9	181					7	3.8	1.0	304
6.0 "	6	7.1	4.6	065	2	7.5	5.7	288					4	7.3	1.8	153					2	6.3	1.7	082
7.2 "	2	5.3	3.1	133	1	7.5	7.5	125					1	2.5	2.5	250								
9.0 "	1	8.5	8.5	095	1	15.5	15.5	100																

Station	SILIGURI/BAGHDOGRA												SRINAGAR											
	0530				1130				1730				2330				0530*			1730*				
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.6	1.2	063	15	2.5	1.6	110	30	2.1	1.3	080	30	2.0	1.6	053	24	0.1	0.1	131	23	1.3	0.4	312
0.15 a.g.	19	4.0	3.7	070	13	3.5	2.8	130	26	3.8	2.3	083	20	4.1	3.3	077	24	1.8	1.6	133	23	2.4	0.9	333
0.3 a.m.s.l.	19	4.0	3.8	077	13	3.4	2.8	127	26	3.8	2.4	088	20	4.1	3.5	083								
0.6 "	19	4.1	3.5	093	13	3.2	2.5	127	25	3.7	2.5	107	20	3.7	2.9	088								
0.9 "	17	4.4	3.6	091	11	3.2	2.5	115	23	3.6	2.4	118	18	3.4	1.9	105								
1.5 "	14	4.7	4.4	091	9	4.6	2.7	083	17	5.1	3.5	098	14	4.0	2.1	070								
2.1 "	10	5.3	4.4	094	4	3.9	2.9	106	14	5.6	4.0	093	7	3.6	2.7	095	24	1.6	0.8	117	23	2.7	1.4	314
3.0 "	5	5.4	3.3	090	1	13.0	13.0	100	9	6.5	5.3	081	6	5.4	4.9	104	24	2.3	1.2	300	23	3.6	2.9	303
3.6 "	3	3.5	0.5	150					6	4.4	3.9	095	2	5.5	5.5	125	24	4.1	3.5	310	23	5.1	4.5	309
4.5 "	2	6.7	4.4	039					3	5.0	4.4	098					24	5.8	5.2	324	23	5.1	3.7	328
5.4 "	2	4.5	3.7	172					2	2.5	0.7	025					24	5.0	4.1	325	23	5.3	2.9	327
6.0 "	2	4.7	2.7	091					2	4.0	0.6	110					24	5.4	4.6	312	23	6.3	4.5	311
7.2 "																	24	10.0	9.0	301	21	10.6	9.4	294
9.0 "																	21	18.6	17.1	283	20	18.1	15.9	290

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	TIRUCHCHIRAPPALLI												TRIVANDRUM											
	0530				1730				2330				0530*				1130				1730*			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	5.6	5.6	269	30	8.1	6.7	263	30	6.5	6.2	265	30	2.1	1.4	337	30	3.2	2.9	306	30	4.5	4.1	299
0.15 a.g.	30	9.3	9.2	275	30	9.7	8.3	264	27	9.4	9.1	267	30	6.5	6.0	322	29	7.2	6.5	298	30	8.3	8.0	302
0.3 a.m.s.l.	30	10.7	10.7	273	30	10.2	9.0	264	27	9.9	9.5	266	30	7.4	6.9	313	29	7.3	6.7	295	30	8.9	8.7	301
0.6 "	30	14.1	13.9	275	30	10.2	9.6	269	27	13.2	13.1	268	30	10.4	7.2	316	29	8.6	8.0	296	30	11.4	11.1	299
0.9 "	30	13.5	13.4	277	30	10.9	10.5	265	27	13.3	13.1	269	30	10.5	10.2	297	25	10.5	9.9	297	30	12.5	12.1	297
1.5 "	30	11.1	11.0	272	30	10.7	10.4	262	27	11.1	10.8	271	30	11.7	11.5	293	14	11.5	11.2	298	30	12.2	12.0	298
2.1 "	30	9.1	8.4	272	30	9.3	8.7	269	27	8.9	8.6	274	29	11.6	11.3	285	8	12.8	12.6	295	30	12.5	12.3	294
3.0 "	30	8.0	7.2	279	21	8.3	7.5	280	24	6.9	6.2	288	29	10.2	9.5	280	6	15.3	14.3	292	30	11.9	11.6	284
3.6 "	25	7.5	6.7	280	17	8.0	7.3	285	14	6.3	4.8	275	29	9.2	8.6	279	3	13.5	13.3	287	30	10.4	9.9	280
4.5 "	14	7.7	7.1	271	17	8.6	7.6	283	10	7.3	6.1	253	29	9.0	7.8	283					30	9.5	8.2	279
5.4 "	10	6.3	5.3	250	9	8.3	7.6	279	3	4.8	3.5	288	29	7.2	5.2	285					30	8.1	6.4	278
6.0 "	7	5.6	4.9	236	9	6.4	5.5	261	2	2.0	1.9	203	29	6.3	3.8	285					29	7.1	5.0	280
7.2 "	7	5.6	1.8	182	7	4.4	2.8	227					28	5.8	1.1	172					29	7.9	0.9	249
9.0 "	3	6.5	6.0	117	4	5.0	0.5	095					28	8.3	5.6	080					28	8.1	5.6	087

Station	TRIVANDRUM				UDAIPUR								VENGURLA											
	2330				0530				1730				2330				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.0	1.7	324	30	1.8	1.7	235	30	3.5	2.6	252	30	3.1	2.5	231	30	1.0	0.1	323	30	2.3	1.4	264
0.15 a.g.	29	6.9	6.2	311	30	5.5	4.9	254	29	6.7	5.8	254	29	5.9	4.8	238	27	3.7	1.4	266	25	5.8	4.6	268
0.3 a.m.s.l.	29	8.1	7.6	308													27	4.7	3.2	263	25	6.8	5.8	272
0.6 "	29	10.5	9.9	303													26	7.4	6.4	273	23	8.6	8.2	278
0.9 "	28	11.5	11.0	300	30	6.2	5.4	254	29	6.7	6.2	253	29	6.2	5.4	246	20	9.1	8.7	288	18	9.5	8.9	281
1.5 "	22	11.7	11.5	300	25	7.6	6.3	257	29	6.3	5.6	251	29	7.4	6.8	259	9	9.0	8.5	286	7	11.6	10.9	290
2.1 "	19	11.7	11.4	291	21	5.3	1.1	279	28	6.6	4.6	266	24	5.6	3.5	258	1	2.0	2.0	360	4	5.5	4.7	296
3.0 "	13	8.0	7.3	282	18	5.7	4.2	025	24	6.0	3.2	300	19	4.8	0.9	033					3	6.8	3.0	236
3.6 "	6	3.9	3.7	267	15	4.7	3.2	066	21	5.8	1.8	355	8	4.8	1.8	001					2	6.0	5.8	130
4.5 "	4	3.5	3.1	249	14	5.0	3.8	056	18	6.7	2.7	347	2	4.7	4.4	358					2	4.5	4.5	135
5.4 "	2	3.0	2.9	298	9	6.3	3.1	072	16	8.8	1.8	322	1	3.0	3.0	360					1	1.0	1.0	160
6.0 "	2	3.7	3.7	255	9	6.5	2.5	085	11	6.8	0.6	016	1	3.0	3.0	320					1	1.5	1.5	075
7.2 "					7	4.1	2.1	081	4	6.5	5.4	283												
9.0 "					2	5.5	4.1	314	2	8.0	8.0	033												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Station	VENGURLA				VERAVAL								VIJAYAWADA/GANNAVARAM															
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.3	0.4	308	30	7.7	6.9	253	30	8.3	7.5	255	30	7.7	7.0	251	30	3.2	2.9	275	30	4.8	3.8	296				
0.15 a.g.	28	4.6	2.1	283	30	7.7	7.1	248	29	7.5	6.9	249	30	7.7	7.3	247	27	6.8	6.6	274	29	6.4	5.0	287				
0.3 a.m.s.l.	28	5.4	4.0	270	30	8.2	7.6	248	29	8.4	8.0	251	30	8.3	7.9	250	27	8.5	8.2	280	29	6.8	6.0	290				
0.6 „	28	7.0	6.3	275	29	8.6	8.2	248	29	9.9	9.5	253	30	9.1	8.7	252	27	11.2	10.8	285	29	7.0	6.6	291				
0.9 „	19	9.1	8.5	276	28	8.9	8.4	247	29	10.0	9.7	254	27	10.2	9.9	251	27	12.9	11.9	292	29	7.2	6.8	289				
1.5 „	13	10.2	9.8	284	22	7.7	6.7	242	25	7.8	6.7	244	23	8.2	7.5	243	26	10.3	9.4	291	27	8.5	8.0	286				
2.1 „	6	9.0	8.7	281	15	6.2	2.6	204	19	6.9	3.8	237	22	6.8	4.1	232	26	8.2	7.5	289	25	9.0	8.2	278				
3.0 „	3	6.2	2.8	280	10	6.3	3.1	160	14	5.2	2.0	132	17	5.9	1.3	154	24	6.7	5.7	284	20	7.7	6.9	282				
3.6 „					5	5.9	2.1	164	14	6.0	3.9	093	12	5.7	4.2	110	20	6.3	5.1	278	15	7.9	6.7	288				
4.5 „					2	6.5	5.5	066	12	5.8	4.1	091	9	4.8	3.7	095	16	5.9	5.0	252	11	7.3	6.8	297				
5.4 „					1	1.0	1.0	350	12	5.5	2.7	080	5	3.8	0.9	133	14	6.2	4.6	248	6	5.8	5.2	287				
6.0 „					1	4.0	4.0	290	12	5.8	2.2	070	2	4.0	0.5	151	11	5.5	3.0	253	4	5.9	5.1	263				
7.2 „					1	7.0	7.0	260	11	7.2	3.6	032					6	5.8	1.3	223	3	4.0	3.9	243				
9.0 „									10	6.1	3.4	055					3	9.3	8.6	081	2	5.7	1.8	088				

Station	VIJAYAWADA GANNAVARAM				VISHAKHAPATNAM																			
	2330				0530*				1130				1730*				2330							
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	2.9	2.3	234	29	2.5	1.7	271	30	4.1	2.9	235	30	3.3	2.9	266	30	2.7	1.6	246				
0.15 a.g.	30	7.1	5.4	241	29	6.8	5.3	275	30	4.5	3.4	230	30	5.6	4.5	267	29	4.9	3.8	238				
0.3 a.m.s.l.	30	7.8	6.2	247	29	7.8	6.5	265	30	4.5	3.8	240	30	5.7	4.9	264	29	6.1	5.0	245				
0.6 „	30	9.0	7.8	259	29	10.2	9.1	252	29	5.1	4.4	261	30	6.3	5.8	250	29	7.1	5.9	254				
0.9 „	29	9.5	8.6	267	29	10.3	8.9	257	29	6.3	5.5	285	30	6.7	5.3	257	28	7.4	5.9	262				
1.5 „	27	9.8	9.1	274	29	10.1	9.0	268	28	8.1	6.7	300	30	6.3	4.8	282	25	7.7	6.8	280				
2.1 „	26	9.5	9.0	280	29	9.0	7.3	280	27	8.5	6.7	292	29	6.1	4.5	296	24	6.1	5.4	295				
3.0 „	25	7.5	6.7	289	29	6.4	4.4	289	24	6.7	5.3	283	29	6.5	4.4	288	20	5.3	4.6	295				
3.6 „	17	7.4	6.5	294	27	6.4	4.5	291	23	7.2	5.6	285	29	7.2	4.2	288	11	5.1	3.9	307				
4.5 „	8	5.1	4.6	285	27	6.3	4.1	282	13	7.8	6.4	262	29	7.7	5.3	280	8	4.6	2.5	340				
5.4 „	5	4.7	3.6	280	27	6.7	3.6	281	11	7.9	6.4	258	27	8.1	5.5	271	3	5.2	4.7	336				
6.0 „	3	1.7	1.5	277	26	6.3	3.1	277	10	9.5	7.3	263	27	7.6	4.2	281	2	2.5	1.7	354				
7.2 „					26	5.8	1.1	272	6	7.1	2.5	236	27	7.2	1.2	302								
9.0 „					26	6.7	2.5	093	4	9.6	1.6	108	26	7.6	4.6	060								

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 Km. above mean sea level

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Ht in Km					Ht in Km					Ht in Km					Ht. in Km.									
	n	V	v	D		n	V	v	D		n	V	v	D		n	V	v	D					
	AHMADABAD					BANGALORE				12.0	BIKANER—(Contd.)					GADAG—(contd.)					GORAKHPUR			
	0530 hr.*					0530 hr.@					2330 hr.					1730 hr.								
10.5	19	9.6	4.7	080	10.5	1	4.5	4.5	130	14.1	2	8.8	8.7	221	10.5	2	11.3	11.0	321	10.5	6	6.8	1.4	261
12.0	10	9.5	5.4	107	12.0	1	11.0	11.0	100	16.2	2	8.0	7.5	207	12.0	1	10.5	10.5	165	12.0	2	3.5	1.9	258
14.1	8	12.5	8.8	095	14.1	1	27.5	27.5	085	18.0	2	9.3	9.3	085	GANGTOK				14.1	1	3.0	3.0	290	
16.2	5	17.2	16.4	104	16.2	1	34.0	34.0	095	21.0	1	9.0	9.0	085	0530 hr.				GWALIOR					
18.0	1	20.5	20.5	105	18.0	1	31.5	31.5	100	BOMBAY/SANTACRUZ				10.5	4	8.1	5.0	344	0530 hr.					
	1730 hr.*				21.0	1	12.5	12.5	120	0530 hr.*				12.0	3	7.7	1.7	020	1730 hr.					
10.5	20	7.1	4.3	065		1730 hr.@				10.5	26	7.6	5.2	086	14.1	2	6.3	3.8	270	10.5	2	4.0	1.7	116
12.0	15	7.3	3.8	087	10.5	2	8.5	8.3	110	12.0	20	10.4	8.5	085	GAUHATI				12.0	2	5.5	4.8	118	
14.1	7	12.7	7.7	067	12.0	2	21.5	21.5	112	14.1	13	18.2	17.2	103	0530 hr.*				14.1	2	7.7	4.8	105	
16.2	3	11.3	9.2	080	14.1	1	27.0	27.0	100	16.2	10	23.5	22.9	100	10.5	14	8.1	3.9	269	1130 hr.				
18.0	1	11.0	11.0	075	BHAGALPUR				18.0	4	22.1	21.2	086	12.0	8	6.6	1.3	173	10.5	2	5.5	5.3	340	
	0530 hr.*				10.0	1	5.5	5.5	230	1730 hr.*				14.1	4	7.7	4.0	045	1730 hr.					
	1130 hr.				12.5	1	5.0	5.0	255	10.5	24	7.4	5.6	100	10.5	4	8.4	2.1	275	10.5	2	5.5	3.8	346
10.5	5	5.1	4.1	285	BHOPAL/BAIRAGARH				12.0	19	10.8	9.7	090	12.0	4	11.4	1.9	255	12.0	1	4.0	4.0	305	
10.5	1	5.5	5.5	105	1730 hr.				14.1	15	15.0	7.6	102	14.1	2	4.7	1.9	330	JABALPUR					
10.5	1	5.5	5.5	105	10.5	5	7.1	5.7	088	16.2	9	24.8	22.5	088	16.2	1	10.5	10.5	090	10.5	1	7.5	7.5	070
10.5	3	8.0	5.5	242	12.0	4	7.5	6.5	082	18.0	7	28.2	27.9	097	18.0	1	14.5	14.5	085	JAGDALPUR				
12.0	2	7.7	5.5	168	14.1	1	11.5	11.5	095	21.0	2	22.7	22.5	109	21.0	1	17.0	17.0	351	0530 hr.				
14.1	1	15.5	15.5	185	BHUBANESHWAR				CALCUTTA/DUMDUM				10.5	15	5.7	2.7	260	10.5	1	11.5	11.5	110		
	0530 hr.				10.5	1	6.5	6.5	130	0530 hr.*				12.0	9	7.6	3.8	235	12.0	1	14.5	14.5	110	
	1130 hr.				12.0	1	7.5	7.5	065	10.5	25	6.1	3.4	108	10.5	15	5.7	2.7	260	14.1	1	20.0	20.0	110
10.5	3	11.3	11.2	287	14.1	1	22.0	22.0	110	14.1	19	10.5	8.4	080	12.0	9	7.6	3.8	235	JODHPUR				
10.5	2	9.5	6.2	257	16.2	1	16.0	16.0	085	16.2	9	11.7	10.5	084	14.1	5	8.1	3.5	297	10.5	17	7.9	4.6	274
12.0	1	7.0	7.0	180	BHUJ/RUDRAMATA				10.5	25	6.9	0.4	123	16.2	1	8.5	8.5	345	12.0	8	6.1	3.9	211	
	0530 hr.				10.5	8	4.4	2.1	043	12.0	24	6.7	2.6	075	18.0	1	13.0	13.0	085	10.5	4	10.7	7.3	329
	1130 hr.				12.0	6	5.3	0.8	147	14.1	16	9.1	6.3	078	16.2	1	8.5	8.5	345	12.0	3	8.5	7.5	300
10.5	1	2.5	2.5	305	14.1	5	9.3	5.1	122	16.2	7	10.0	8.0	066	10.5	2	4.3	3.0	032	14.1	2	13.0	9.2	352
12.0	1	3.0	3.0	075	16.2	2	11.5	11.4	079	DEHRADUN				12.0	2	5.3	5.3	017	10.5	14	6.6	1.7	346	
14.1	1	8.5	8.5	050	18.0	1	20.0	20.0	090	1730 hr.				14.1	1	7.0	7.0	035	12.0	7	6.3	3.5	269	
	0530 hr.				10.5	5	6.1	1.3	079	10.5	2	8.5	5.9	280	1730 hr.				14.1	1	15.5	15.5	050	
10.5	2	4.0	3.9	333	12.0	3	8.1	4.7	093	12.0	1	5.0	5.0	185	10.5	1	5.0	5.0	125	LUCKNOW				
12.0	1	5.5	5.5	005	14.1	1	22.5	22.5	110	14.1	1	5.0	5.0	185	GADAG				AMAUSI					
	1130 hr.				BIKANER				GADAG				1730 hr.				0530*							
	0530 hr.				10.5	4	10.0	6.7	295	10.5	2	6.0	4.1	052	10.5	1	8.0	8.0	115	10.5	1	5.0	5.0	275
10.5	1	2.0	2.0	340	10.5	4	10.0	6.7	295	12.0	1	9.5	9.5	090	12.0	1	7.5	1.5	085	10.5	2	4.7	4.1	236
	1730 hr.				12.0	1	9.5	9.5	090	GADAG				1730 hr.				12.0	1	8.5	8.5	250		

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9·0 Km. above mean sea level

June, 1962 (Jyaistha 11—Asadha 9, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D
	MADRAS /MINAM-BAKKAM					NEW DELHI SAFDARJUNG				12.0	SRINAGAR—(Contd.)					VIJAYWADA/GANNAVARAM—(Contd.)								
	0530 hr.*					0530 hr.*				14.1	14 20·5 19·6 273				14·1	1 30·0 30·0 090								
10·5	26	10·0	7·7	092	10·5	27	8·1	5·3	284	16·2	4 7·9 6·7 270				16·2	1 36·0 36·0 085								
12·0	24	16·5	15·7	082	12·0	25	7·8	5·8	266	18·0	1 5·5 5·5 150				18·0	1 32·0 32·0 080								
14·1	23	26·9	25·6	084	14·1	24	6·3	4·3	265	1730 hr.*				21·0	1 35·5 35·5 070									
16·2	15	28·0	26·9	098	16·2	20	6·1	2·1	360	10·5	11 20·7 19·0 283				10·5	2 11·7 9·9 095								
18·0	3	23·5	23·0	083	18·0	17	9·6	7·7	080	12·0	7 23·6 21·9 292				VISHAKHAPATNAM									
21·0	1	30·5	30·5	105	21·0	8	10·7	9·3	092	14·1	5 23·3 23·1 276				0530 hr.*									
	1730 hr.*				24·0	3	14·0	13·8	078	16·2	2 9·5 9·0 281				10·5	26	8·9	7·0	077					
10·5	28	9·1	7·0	096		1130 hr.				18·0	1 8·0 8·0 285				12·0	26	12·3	10·5	078					
12·0	27	15·5	14·4	085		1730 hrs.				TIRUCHCHIRAPPALLI				14·1	23	21·3	20·6	079						
14·1	26	26·6	26·2	085	10·5	1	5·0	5·0	160	10·5	2 13·7 13·5 079				16·2	21	23·2	22·7	093					
16·2	18	27·3	26·7	092		0530 hr.				0530 hr.				18·0	13	25·5	24·7	092						
18·0	8	23·0	22·5	090	10·5	27	8·1	6·1	275	10·5	2 10·0 10·0 080				21·0	6	23·0	22·0	089					
	MINICOY				12·0	26	7·4	5·2	288	TRIVANDRUM				24·0	2	24·0	23·9	100						
	0530 hr.				14·1	26	7·1	2·7	260	0530 hr.*				1130 hr.										
10·5	2	17·0	16·8	074	16·2	25	6·3	4·3	099	TRIVANDRUM				10·5	3	6·5	6·0	075						
	1730 hr.*				18·0	23	8·1	6·8	096	0530 hr.*				12·0	2	11·0	10·9	084						
10·5	29	13·5	12·6	094	21·0	11	11·4	11·1	094	0530 hr.*				14·1	1	12·5	12·5	100						
12·0	29	22·8	22·0	093	24·0	5	11·0	10·5	087	10·5	28 13·3 11·7 087				16·2	1	23·5	23·5	090					
14·1	25	32·5	31·7	089		POONA				12·0	28 23·1 21·9 085				1730 hr.*									
16·2	21	25·7	25·5	096		0530 hrs.				14·1	25 31·6 30·6 086				10·5	26	9·8	7·5	084					
18·0	13	21·0	20·4	090	10·5	1	4·0	4·0	110	16·2	20 22·7 22·2 090				12·0	24	14·4	12·3	079					
21·0	6	25·8	25·7	092		PORT BLAIR				18·0	14 23·3 22·7 089				14·1	21	22·0	21·7	079					
24·0	3	49·3	49·3	086		0530 hrs.				21·0	5 27·0 26·9 088				16·2	20	24·7	23·6	079					
	NAGPUR/SONEGAON					0530 hrs.				24·0	1 33·0 33·0 008				18·0	15	26·2	25·7	083					
	0530 hr.*					0530 hr.*					1730 hr.*				21·0	4	16·3	15·0	080					
10·5	29	7·0	4·5	081	10·5	21	15·4	13·1	078	10·5	27 15·0 13·8 089													
12·0	26	8·0	5·3	088	12·0	11	20·7	19·6	069	12·0	26 22·0 21·2 081													
14·1	21	11·9	10·1	086	14·1	3	24·2	23·3	072	14·1	25 34·0 33·2 086													
16·2	13	17·8	16·8	089		1730 hr.*				16·2	23 22·3 21·9 091													
18·0	8	19·5	17·7	082	10·5	11	11·3	10·1	078	18·0	18 22·4 21·9 089													
21·0	2	24·7	24·7	082	12·0	9	15·9	15·0	091	21·0	7 26·0 26·0 091													
	1130 hr.				14·1	4	24·3	23·3	093		VERAVAL													
	1730 hr.*				16·2	1	20·5	20·5	095	10·5	1730 hrs.				10·5	9	5·6	3·1	068					
10·5	2	7·0	6·4	058		RAIPUR				12·0	5 5·0 4·3 115													
	0530 hr.					0530 hr.				14·1	2 10·5 10·5 115													
10·5	28	7·3	5·2	087	10·5	1	13·0	13·0	090	16·2	1 14·5 14·5 090													
12·0	26	9·4	6·6	086		SRINAGAR					VIJAYWADA/GANNAVARAM													
14·1	21	14·4	13·9	085		0530 hr.*					0530 hr.													
16·2	19	16·7	15·9	087		0530 hr.*					0530 hr.													
18·0	10	23·0	21·9	085		0530 hr.*				10·5	2 21·3 11·3 104													
21·0	4	23·1	19·9	077	10·5	18	21·5	20·2	279	12·0	1 22·5 22·5 100													

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	Ahmadabad	Fan type	20th July 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October 1944	00 and 12	
3	Bangalore	Fan type	10th March 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July 1955	00 and 12	
7	Jodhpur	Clock type	17th April 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June 1946	00 and 12	
9	Manicoy	Fan type	12th May 1963	12	
10	Nagpur/Sonegaon	Fan type	1st October 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December 1943	00 and 12	
12	Port Blair	Fan type	4th December 1949	00 and 12	
13	Srinagar	Clock type	1st August 1962	00 and 12	
14	Trivandrum	Fan type	1st July 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) FROM ASCENTS AT 12 HOURS GMT.

June, 1963 (Jyaistha 11—Asadha 9, 1885 Saka)

Standard Pressure Surface mb.	SRINAGAR Surf. Pr. (833 mb.)						TRIVANDRUM (1001 mb.)						VISHAKHAPATNAM (995mb)					
	No. of obs.	Ht. gpm.	Temperature °A.				No. of obs.	Ht. gpm.	Temperature °A.				No. of obs.	Ht. gpm.	Temperature °A.			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	23	1588	301.4	305	294	287.3	30	064	301.2	303	297	297.0	30	041	303.7	307	300	298.3
1000	23	-051	..	..	..	..	30	072	..	..	..	..	30	000	..	..	..	..
900	23	900	..	..	..	..	30	999	293.9	297	291	290.3	30	941	298.7	304	295	293.3
850	23	1409	..	..	..	..	30	1494	291.0	294	288	287.3	30	1444	295.2	301	291	291.3
800	23	1947	299.0	303	292	281.8	30	2012	288.3	291	285	283.8	30	1970	291.7	296	286	288.5
700	23	3107	290.0	293	285	273.9	30	3135	282.8	287	279	276.1	30	3105	284.4	287	281	281.7
600	23	4398	278.8	285	275	265.4	30	4402	276.0	280	273	270.0	30	4380	280.8	281	274	275.1
500	23	5859	268.2	273	264	..	30	5859	267.6	272	264	..	30	5847	269.4	274	265	..
400	20	7589	258.0	262	252	..	30	7582	257.3	263	253	..	30	7577	259.2	264	254	..
300	18	9700	246.0	250	241	..	29	9692	243.4	250	239	..	29	9710	245.5	249	240	..
250	15	10995	237.9	243	234	..	28	10961	233.1	239	227	..	29	11012	236.3	241	230	..
200	10	12505	227.2	231	223	..	28	12454	221.8	227	216	..	27	12506	225.3	232	220	..
175	9	13377	220.1	225	216	..	28	13296	215.7	224	209	..	26	13362	218.7	225	211	..
150	8	14348	214.0	219	210	..	27	14268	209.3	218	201	..	24	14349	212.0	220	206	..
125	6	15517	208.8	215	202	..	25	15352	203.5	211	196	..	22	15421	205.6	213	201	..
100							24	16681	198.3	203	194	..	21	16781	198.8	205	193	..
80							21	17990	201.3	208	195	..	19	18125	199.0	206	191	..
70							17	18804	203.2	212	194	..	17	18864	200.9	209	194	..
60							11	19710	205.6	211	201	..	12	19805	205.0	213	198	..
50							9	20804	209.3	216	205	..	10	20839	209.5	215	201	..
40																		
30																		
20																		
10																		

Note.—Number of observation refer to those of dynamic height.

Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273° A

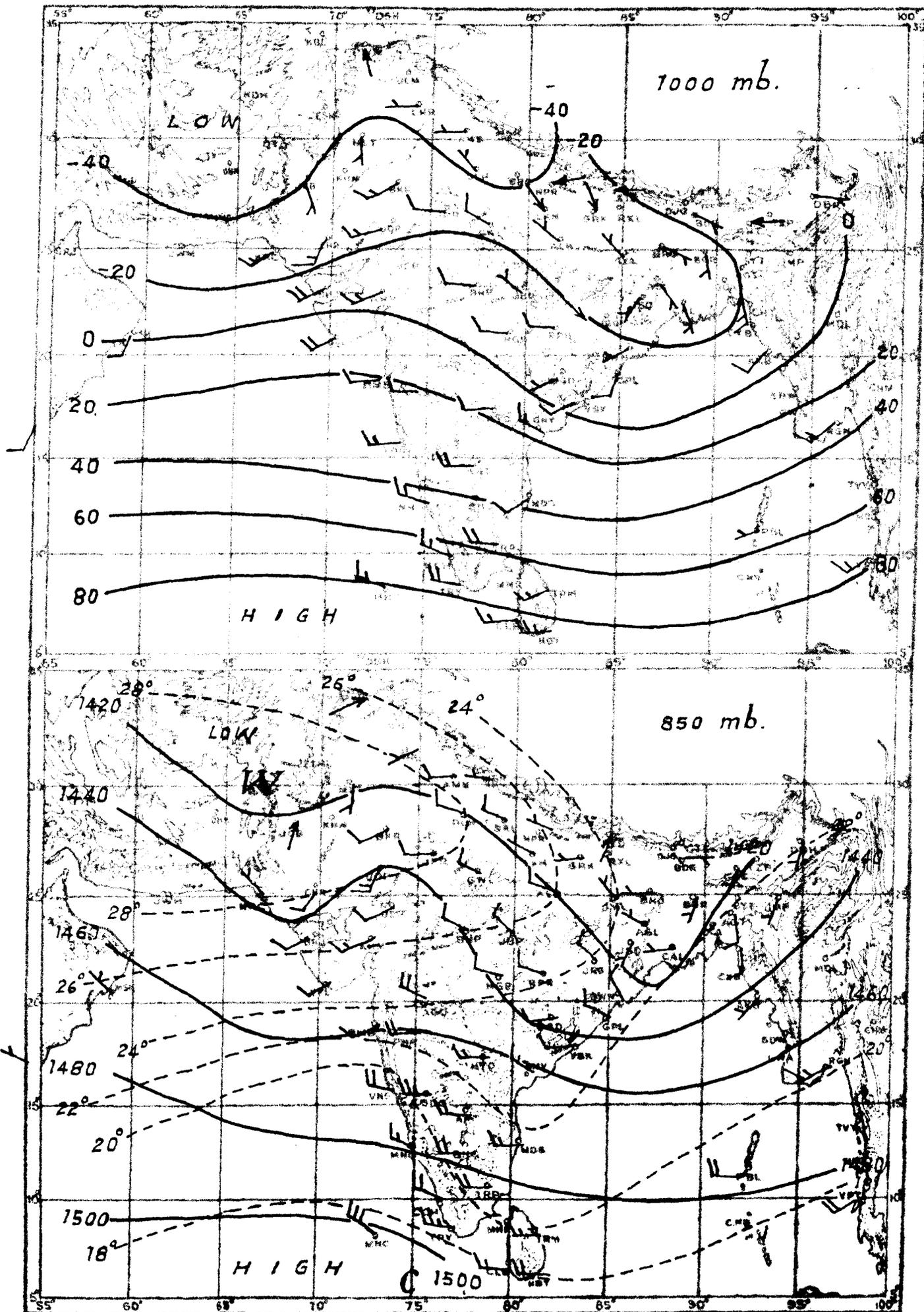
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

JUNE 1963

I.Met.D.

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

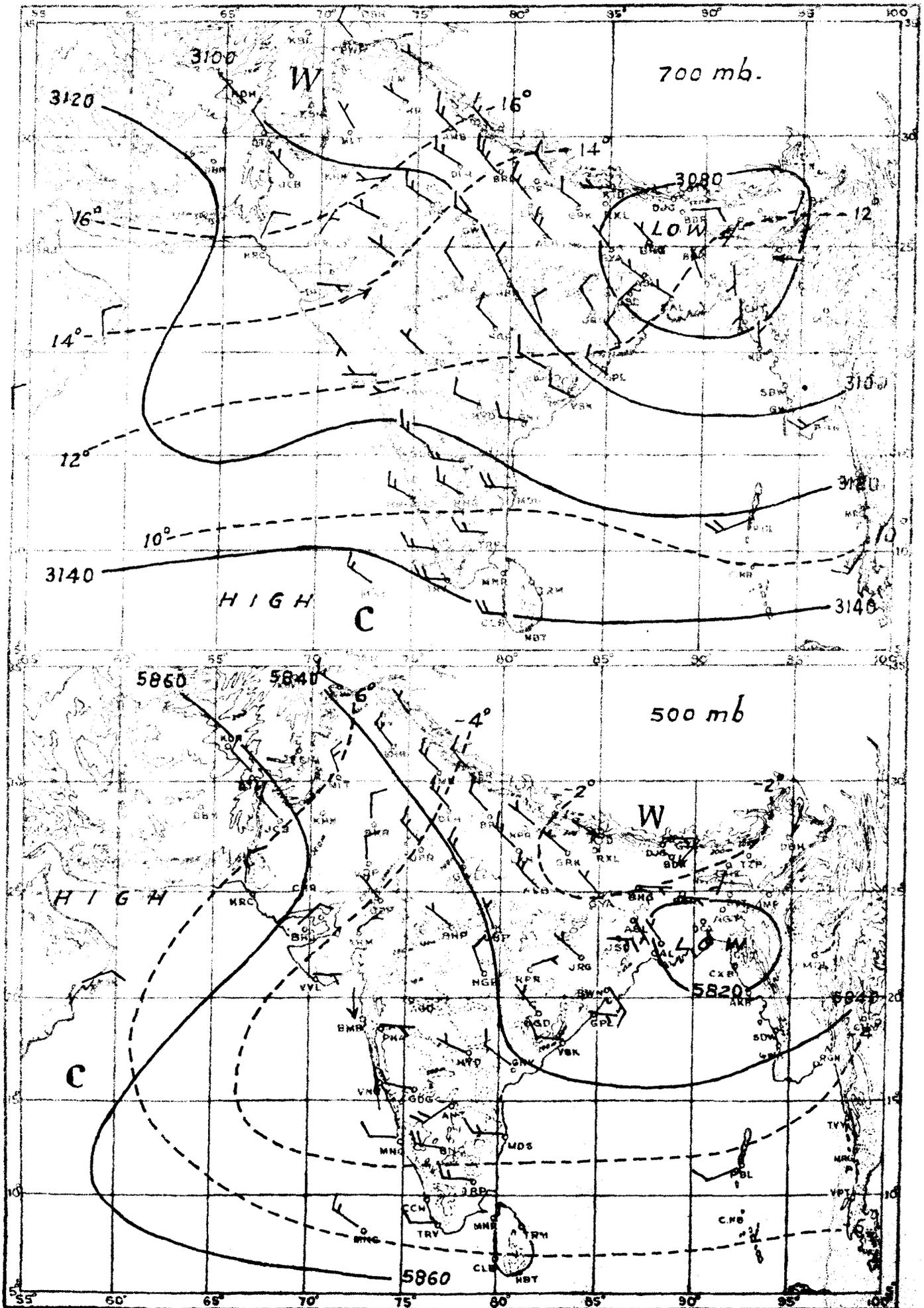
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

JUNE 1963

I Met. D.

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

DDGC/2582(1) 4-67

G.P.E. & P.M.A., 1963

INDIAN WEATHER REVIEW, 1963

Monthly Weather Report

JULY

Published by authority of the Government of India

Chief features :—

- (i) Further extension of the monsoon to cover the entire country by the middle of the month.
- (ii) Very heavy rains causing serious damage and loss of life in the Konkan and Gujarat State in the early part of the month.
- (iii) Prolonged spell of heavy rains in northeast India leading to floods in Assam, Sub-Himalayan West Bengal and Bihar Plains.
- (iv) Reported drought conditions in many parts of Rajasthan and Gujarat State.
- (v) Formation and movement of a Bay depressions.
- and (vi) A severe cloud burst at Pahalgam on 20th.

A well marked low pressure area developed over the Gulf of Cambay and adjoining Gujarat State on 2nd and persisted there till 5th. A trough of low pressure also appeared over the northwest Bay of Bengal on 1st. The latter slowly intensified and concentrated into a depression over the head Bay by the morning of 4th with centre about 150 kms south southwest of Calcutta. Moving in a northwesterly direction, it weakened into a low pressure area over north west Madhya Pradesh and neighbourhood by 7th. Later it shifted to west Uttar Pradesh and persisted there on 8th and 9th. Thereafter, it filled up on the sea level chart but the associated upper air trough moved away eastwards across Assam by 14th. In association with these developments, the monsoon was quite active in the Peninsula during the first ten days, in Gujarat State on a number of days and in east Rajasthan on 8th. Under the influence of the depression heavy to very heavy rains occurred in the central parts of the country, Uttar Pradesh, the Punjab(I), and north east India. The monsoon also advanced into the Punjab(I) by the 10th. Some of the noteworthy amounts of rainfall recorded were : Karwar and Devgad 13 cm each on 2nd, Ratnagiri 13 cm on 3rd, Dahanu 31 cm on 5th, Veraval 10 cm on 6th, Mahabaleshwer 37 cm, Bhira 23 cm, Bombay 19 cm, Devgad 14 cm and Sagar 12 cm on 7th, Ambala 11 cm, Baroda 14 cm and Jalpaiguri 20 cm on 9th, Mussoorie 11 cm, Broach 16 cm and Surat 12 cm on 10th, Dehra Dun 14 cm on 11th and Cherrapunji 52 cm on 12th. The railway traffic between Bombay and Gujarat was disrupted owing to breaches in the Western Railway track between Sanjan and Umbergaon caused by heavy downpour. Also twenty people were reported to have been drowned in the flood waters in Surat District and another twenty-five in Gujarat. There were also press reports about the second wave of floods in Assam which began towards the end of last month.

With the weakening of the depression mentioned above and its movement to west Uttar Pradesh, the monsoon trough shifted northwards during the second week and its axis lay generally close to the foot of the Himalayas till the beginning of the last week. In association with this the monsoon activity was confined to the northern parts of the country, while the activity over the Peninsula remained generally feeble till 25th. However, a few good showers occurred in the Madras State during the second week. Tirupattur recorded 9 cm of rain on 15th.

A low pressure area developed over east Uttar Pradesh on 14th. Moving slowly westwards it merged with the seasonal trough by 17th. Under its influence, very heavy rains occurred in Uttar Pradesh and Madhya Pradesh and the monsoon also extended further to cover the entire country by 17th. Some of the noteworthy amounts of rainfall recorded were : Dehri 16 cm on 14th, Allahabad 20 cm on 14th and 23rd cm on 15th, Faizabad 15 cm and Fatehpur 12 cm on 15th.

The seasonal low over West Pakistan was quite active during the third week. In association with the shift of the axis of the monsoon trough to the foot of the Himalayas, a spell of heavy rains occurred in the Western Himalayas. Dharamsala recorded 10 cm on 18th and 10 cm on 20th, Dalhousie 9 cm on 18th, Mandi 10 cm on 20th and Nainital 11 cm on 21st. Due to these heavy rains the Ravi, Beas and a few other rivers in the Punjab(I) were reported to have risen in spate. According to press reports, 40 people were feared to have been killed and a few buildings and vehicles swept away by a fierce cloud burst at Pahalgam in Kashmir on the evening of 20th.

An upper air trough which formed over Uttar Pradesh on 19th moved away eastwards across Assam by 22nd. Under its influence, fairly well distributed rainfall occurred in the central parts of the country on 19th. The heavy

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rainfall belt shifted eastwards and the monsoon activity increased over northeast India. Some of the heavy rainfall amounts reported were : Pasighat 14 cm each on 19th and 20th. Motihari 15 cm, Forbesganj 12 cm and Jalpaiguri 11 cm on 20th and Siliguri 16 cm, Darjeeling 15 cm on 21st. The flood situation in Assam continued to be serious with the Brahmaputra rising alarmingly. There were also reports of floods in Sub-Himalayan West Bengal and Bihar Plains where the flooded rivers were eroding their banks and threatening many villages.

Under the influence of two low pressure areas moving successively westwards from the Bay of Bengal, the rainfall activity revived over the Peninsula during the last week and the monsoon was also generally active over the country towards the end of the month. The first low pressure area formed over the head of the Bay of Bengal on 23rd. Moving westwards, it weakened, however, the associated upper air cyclonic circulation persisted over east Madhya Pradesh till 28th, after which it moved westwards and became unimportant by the 30th. The second low pressure area developed over northwest bay of Bengal on 29th. It moved northwestwards and lay over the extreme north Madhya Pradesh and adjoining Uttar Pradesh on 31st. In association with these developments, the monsoon trough shifted to the south of its normal position and was also quite active. Fairly well distributed rainfall occurred over most parts of the country, with the rainfall extending to Gujarat State and Rajasthan. The monsoon was also strong along the west coast, central parts of the country and in the Western Himalayas. Some of the noteworthy amounts of rainfall recorded during this period were : Aijal 16 cm on 23rd, North Lakhimpur 14 cm and Minicoy 13 cm on 25th, Honavear 12 cm on 26th, Harnai 17 cm, Vengurla 13 cm and Goa and Ratnagiri 12 cm each on 28th, Dharamsala 18 cm and Rajkot 9 cm on 29th and Balasore 12 cm, Idar 11 cm and Raipur 10 cm on 30th. According to press reports, many parts of Rajasthan and Gujarat State, which had been hit by drought saw the end of the dry spell towards the close of the month. In Assam, West Bengal and Bihar State, the flood situation continued to be serious and even deteriorated in some parts due to persistent heavy rain.

The total rainfall for the month was in moderate excess in Rayalaseema, the Madras State and the Arabian Sea Islands and in slight excess in Assam, the Konkan Marathwada. It was in slight defect in the Bay Islands, Gangetic West Bengal, Orissa, West Uttar Pradesh, Madhya Pradesh and coastal and south Interior Mysore, in moderate defect in the Punjab(I), Jammu and Kashmir, Vidarbha and north Interior Mysore and in large defect in west Rajasthan, Saurashtra and Kutch. It was normal over the rest of the country outside Himachal Pradesh.

Mean maximum temperature was above normal in west Uttar Pradesh, the Punjab(I), Jammu and Kashmir, Rajasthan and west Madhya Pradesh and normal over the rest of the outside Himachal Pradesh. Mean minimum temperature was above normal in west Rajasthan and below normal in Jammu and Kashmir. It was normal over the rest of the country outside Himachal Pradesh.

Mean relative humidity in the morning was below normal in Jammu and Kashmir and normal over the rest of the country outside Himachal Pradesh.

Mean cloud amount in the morning was above normal in north Interior Mysore and below normal in West Uttar Pradesh, and Jammu and Kashmir. It was normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I. S. T. of the date noted in the succeeding column ; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hours I. S. T. of the date given in the succeeding column.

R. Ananthkrishnan,

Poona 5 ;

for DIRECTOR GENERAL OF OBSERVATORIES.

The 14th February, 1963.

Errata to M.W.R. for the quarter July to September 1963.

Page No.	Station	Hour	Column For	Read
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Table I : Division

361	4. Bihar	2	9.0	-9.0
361	5. Uttar Pradesh	2	32.3	-32.3
361	6. Punjab (India) Including Himachal Pradesh and Delhi*	8	-3.6	3.6
361	-do-	8	+0.8	-0.8

Sub-Division:

361	15. Madhya Pradesh (West)	6	383	83
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Table II

362	Pasighat	15	..	20 ^(e)
362	Dangia	11	340.5	340.5
362	Haflong	9	26.31	31
362	Silchar	27	Blank	0
362	Imphal (Tulihal)	27	-do-	0
362	Cooch Behar	24	3	0 ^(a)
363	Sambalpur	17	11.3	11.3
363	Dehri	3	..	+0.1
363	Dehri	7	..	-0.4
363	Baharaich	13	78.8	74.8
363	Gonda	6	28.0	26.0
363	Foot note	-	(n) Total for 17 days.	(n) Total for 18 days.
364	Faizabad	27	Blank	0
364	Kanpur (Aerodrome)	6	20.5	26.5
364	Varanasi (Babatpur)	12	+97.2	+91.2
364	Varanasi	19	+0.3	+1.3
364	Bareilly	3	+1.0	+1.6
364	Aligarh	7	-0.3	+0.3
364	Amritsar (Rajasansi)	28	0	5
364	Adampur Aerodrome	2	36.5	35.6
364	Chandigarh	13	26.4	64.2
364	Karnal	14	10	30
364	Karnal	15	3	5
364	Bilaspur	10	108.2	168.2
365	Banihal	4	32.3	32.7
365	Barmer	10	44.0	44.6
365	Ajmer	4	54.2	42.2
365	Sagar	2	30.8	30.5
366	Chhindwara	20 ^(a)	0	2
366	Chhindwara	21	2	0
366	New Kandla	28	0	1
366	Okha	18	29.9	29.2
366	After station Surendranagar please read as follows :-			
366	Okha	1	Jamnagar (Aerodrome)	Okha
366	Jamnagar (Aerodrome)	1	Dwarka	Jamnagar (Aerodrome)
366	Dwarka	1	Rajkot	Dwarka

Page No.	Station	Hour	Column	For	Read
366	Rajkot		1	Bhaunagar Aerodrome	Rajkot
366	Bhaunagar Aerodrome		1	Rajkot	Bhaunagar Aerodrome
366	Porbander Aerodrome		1	Porbander	Porbander Aerodrome
366	Station after Porbander Aerodrome is Keshod. Hence delete Porbander.				
367	Dahanu		10	428.4	478.4
367	Ratnagiri		6	23.4	24.4
367	Ratnagiri		12	+192.5	+192.4
367	Nandurbar		6	23.4	23.8
367	Jalgaon		9	31	21
367	Deolali (Aerodrome)		11	131.1	131.9
367	Ahmednagar		13	41.6	47.6
367	Jeur		11	254.8	154.8
367	Jeur		18	15.7	15.6
367	Miraj		23	2	0
367	Kolhapur		9	28	2,28
367	Kolhapur		11	165.4	365.4
367	Nander		2	33.2	32.2
367	Nander		11	662.9	162.9
367	Amraoti		7	-0.5	+0.5
367	Amraoti		10	75.3	75.8
367	Chanda		3	-0.3	+0.3
367	Chanda		17	15.2	15.7
367	Pusad		8	21.1	22.1
367	Sironcha		9	125	1,25
367	Visekhapatnam		9	14	17
367	Rentachintala		24	Blank	0
367	Gannavaram		7	25.8	25.3
368	Tambaram (Aerodrome)		24	1	0
368	Karwar		12	-258.9	-255.9
368	Karwar		29	9	0
368	Mangalore (Bajpe)		24	2	0
368	Bijapur		9	17,21	17,22
368	Belgaum		5	30	24
368	Gadag		5	19,22,24	19,23,24
368	Gadag		13	14.2	14.6
369	Hassan		10	93.2	93.0
369	Dalhousie		16	+0.5	-0.5
369	Dharamsala		5	5 days	5
369	Dharamsala		10	122.8	322.8
369	Mukteswar (Kumaun)		13	216.6	46.6
369	Kalimpong		9	7,16	7,16,23
369	Cherrapunji		1	Cherrapunji	Cherrapunji (R)
369	Abu		12	-435.5	-435.0
369	Lachen		21 to 29	Zeros	Dashes
370	Gangtok		24	0	30

Table III

371	Long Island	0830	18	29	28
371	Long Island	1730	18	25	29
371	Port Blair	0530	18	29	25
371	Port Blair	0830	14	+0.3	-0.3
371	Dibrugarh (Mohanbari)	0830	10	31.3	31.7

Page No.	Station	Hour	Column	For	Read
371	Rangia	0830	7	8.2	28.2
371	Rangia	1730	7	0.6	30.6
371	Foot note	-	-	(c)Mean of 26 days	(c)Mean of 28 days
371	Foot note	-	-	(e)Mean of 28 days	(e)Mean of 26 days
372	Luding	1730	10	32.2	32.4
372	Imphal (Tulihal)	1730	24	3	2
372	Agartala	0530	7	25.7	25.8
373	Midnapur	0830	21	0	2
373	Keonjhar	0830	5	995.0	950.0
374	Chandbali	1730	21	6	1
374	Phulbari	0830	21	Blank	0
374	Bhubaneswar	0530	5	994.5	994.4
374	Copalpur	1130	7	28.3	28.8
374	Jamshedpur	1130	4	998.0	998.9
374	Chribasa	1730	24	7	17
375	Forbesganj	1730	13	5.3	5.8
375	Patna	0830	1	Not clear	Patna
375	Patna Aerodrome	0830	29	0	1
375	Patna Aerodrome	1130	29	1	0
375	Patna Aerodrome	2330	3	52	,,
375	Gaya	0230	3	116	114
375	Gaya	0830	10	31.7	31.9
375	Lucknow (Amausi)	0230	10	31-	31.9
375	Lucknow (Amausi)	0830	12	+8	+6
375	Fatehpur	0830	12	+8	0
376	Allahabad (Bamhrauli)	0230	1	Allahabad(Bamrauli)	Allahabad(Bamhrauli)
376	Allahabad (Bamhrauli)	2330	23	6	7
376	Varanasi (Babatpur)	0530	4	997.1	997.9
376	Varanasi	0830	3	76	85
376	Varanasi	1730	7	30.9	30.8
376	Dehra Dun	1730	7	28.8	28.7
376	Najibabad	0830	1	Najibabad	Najibabad
376	Najibabad	0830	4	Not clear	998.3
376	Najibabad	1730	4	Not clear	995.2
376	Bareilly	1730	5	95.4	975.4
376	Bareilly P.B.O.	1130	27	3	0
377	Amritsar (Rajesansi)	1130	16	0	1
377	Adampur (Aerodrome)	0530	3	238	249
377	Candigarh	0830	10	29.8	29.4
377	Ambala	0830	14	-1.0	-1.5
377	Ambala P.B.O.	2330	5	965.9	965.4
377	Hissar	0830	25	11	4
377	Hissar	1130	22	Blank	7
377	Hissar	1730	23	Blank	2
377	Hissar	2330	4	99.7	995.7
377	Hissar	2330	5	97.16	971.6
377	Hissar	2330	9	Blank	23.3
377	Hissar	2330	10	Blank	28.6
377	Hissar	2330	11	Blank	63

Page No.	Station	Hour	Column	For	Read
378	New Delhi (Safdarjung)	0230	15	9.0	9.6
378	Palam (Aerodrome)	1430	10	26.7	26.4
378	Bilaspur	0830	3	587	493
378	Leh	0830	12	-2	-23
378	Gulmarg	0830	10	1.4	12.4
378	Gulmarg	0830	18	24	25
378	Jammu (Aerodrome)	0530	5	993.3	963.3
378	Jammu (Aerodrome)	1130	17	Blank	1
378	Jammu (Aerodrome)	1730	10	26	26.0
378	Mahajan	1730	7	37.1	37.1 (f)
378	Mahajan	1730	19	1	1(g)
378	Foot note	-	-	+ Observations for 27 days.	(d) Observations for 27 days.
379	Churu	0830	6,12,14		dashes
379	Bikaner	1730	5	986.1	968.6
379	Jaisalmer	1730	21	6	0
379	Jodhpur	1730	5	970.2	970.1
379	Barmer	0530	4	995.9	996.9
379	Sikar	0830	4	998.	998.5
379	Kota (Aerodrome)	0530	5	976.0	967.0
379	Kota	0830	14	-0	0
379	Erinpura (Jawai Dam)	1730	19	7	27
380	Chambal (Rawat Bhatta Dam)	0830	6,12,14	Head	dashes
380	Chambal (Rawat Bhatta Dam)	1730	15	2.9	12.9
380	Gwalior	0230	4	995.5	995.9
380	Guna	0830	25	26	22
380	Ujjain	0830	21	1	0
380	Rajpur (Jhabua)	0830	1	Rajpur (Jhabra)	Rajpur (Jhabua)
381	Sidhi	0830	3	Blank	272
381	Sidhi	0830	4	..	997.1
381	Sidhi	0830	5	..	967.1
381	Sidhi	1730	3	..	..
381	Sidhi	1730	4	..	994.5
381	Sidhi	1730	5	..	964.7
381	Pendra	1730	10	27.8	27.9
381	Raipur	0830	5	967.7	967.5
381	Deesa	1730	8	26.6	26.0
381	Idar	0830	13	5.1	7.1
381	Ahmedabad	1130	5	995.9	995.0
382	Baroda (Aerodrome)	0830	9	24.2	24.7
382	Baroda (Aerodrome)	1130	8	26.0	26.1
382	Surat	1130	8	25.4	26.4
382	Surat	2330	4	1000.3	1002.3
382	Bhuj (Rudramata)	0230	5	989.8	989.9
382	Bhuj (Rudramata)	1130	15	25.0	25.0(a)
382	Bhuj (Rudramata)	1730	15	26.1 (a)	26.2
382	Mandvi	0830	29	0	6
382	Okha	0530	24	6	19
382	Okha	1730	17	35	30

Page No.	Station	Hour	Column	For	Read
382	Jamnagar (Aerodrome)	1130	5	998.6	998.4
382	Rajkot	1730	15	33.4	35.4
382	Bhaunagar Aerodrome	0830	15	20.2	20.1
382	Porbandar Aerodrome	1130	5	1001.3	1001.2
383	Keshod	1730	15	34.9	34.8
383	Veraval	1730	11	81	82
383	Dahanu	0830	19	4	3
383	Bhira	1730	15	2.3	2.9
383	Devgarh	0830	6	-0.4	-0.5
383	Jalgaon	1730	18	43	13
383	Deolali Aerodrome	0830	8	25.5	22.5
383	Ahmednagar	0830	15	15.5	12.5
383	Ahmednagar	1730	15	12.5	15.2
383	Poona	0830	11	38	83
384	Aurangabad (Chikalthen)	1730	24	3	5
384	Amraoti	0830	6	-0.2	+0.2
384	Bramhapuri	1730	8	25.8	25.5
385	Kalingashtam	1730	10	34.6	34.0
385	Gannavaram	1730	5	997.9	997.6
385	Gannavaram	2330	11	68	88
385	Nagarjunkonda	0830	9	24.1	21.4
385	Remagundam	0830	18	31	21
385	Hanamkonda	0830	14	-0.1	+0.1
385	Bhadrachalam	0830	24	1	5
386	Mahbubnagar	1730	11	62	63
386	Anantpur	0530	10	23.1	23.5
386	Anantpur	0530	6	0	..
386	Anantpur	0830	6	..	0
386	Cuddapah	0830	14	+0.5	-0.5
386	Madras (Minambakkam)	0230	7	23.4	27.4
386	Madras (Minambakkam)	0230	23	3	4
386	Vellore	0830	6	-0.1	+0.1
386	Vellore	1130	20	Blank	0
386	Vellore	1730	11	52	51
386	Vellore	1730	20	Blank	1
386	Vellore	2330	20	Blank	0
386	Tiruppattur	0830	18	2	29
386	Tiruppattur	0830	19	0	17
386	Tiruppattur	1730	19	17	15
386	Nettur Dam R.S.	0830	19	15	0
386	Salem	0530	10	24.9	24.4
386	Salem	1130	22	1	0
386	Coimbatore	0830	22	1	0
387	Palayankottai	0830	22	1	0
387	Palayankottai	1730	22	0	1
387	Gulbarga	1730	5	950.8	950.3
387	Belgaum	1730	9	20.0	20.6
387	Belgaum (Samra)	0530	18	1	21

Page No.	Station	Hour	Column	For	Read
387	Gadag	0830	8	21.8	21.9
388	Chitra Durga	0830	15	3.3	13.3
388	Palghat	0830	4	108.87	1008.7
388	Fort Cochin	1730	16	Blank	0
388	Cochin (Naval Air Station)	0530	4	0081.2	1008.2
388	Cochin (Naval Air Station)	0530	11	75	95
388	Cochin (Naval Air Station)	1130	26	5	8
389	Dalhousie	0830	10	..	18.8
389	Dalhousie	1730	10	20.1	20.0
389	Dharmasala	0830	6	17.4	-2.6
389	Mukteswar (Kumsum)	1730	5	776.7	766.7
390	Gorkha*	1130	2	1730	1130

Page	Station	Time	Level	Element	Printed entry	Correct entry
400	Gauhati	1130	9.0	n	-	4
403	Madras	0530*	7.2	D	285	235
409	Minicoy	0530	-	Time	0530*	0530
409	Port Blair	0530*	18.0	D	10	102
409	Port Blair	1730*	16.2	D	07	070
412	Calcutta	00	70 mb.	Mean	505.6	205.6

** ** *

AUGUST 1965.

Page No.	Station	Hour	Column	For	Read
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Table I - Division

421	11 Maharashtra State	-	7	0	80
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Table II

422	Rangia	-	18	6.	6.5
422	Kailashahar	-	10	104	104.2
422	Jalpaiguri	-	7	0.5	-0.5
422	Malda	-	7	0.5	+0.5
422	Barnampore	-	5	4 31	24,31
422	Burdwan	-	9	1	11
422	Barrackpore (Aerodrome)	-	9	1	11
422	Sandheads	-	4	2.4	32.4
423	Balssore	-	4	32.2	33.2
423	Motihari	-	10	9.8	9.8
423	Kanpur	-	19	1.4	-1.4
423	Ballia	-	11	276.4	276.4

Page No.	Station	Hour	Column	For	Read
423	Foot note	-	-	Blank	(b) Total for 29 days
423	Foot note	-	-	(e) Mean of 26 days	(c) Mean of 26 days
424	Bareilly	-	5	6,10	10,16
424	Agra	-	12	-40.1	+40.1
424	Ludhiana	-	10	195.5	197.5
424	Patiala	-	22	2	0
424	Hissar	-	20(a)	1	0
424	Srinagar	-	24	1	0
424	Srinagar	-	26	3	0
425	Kota (Aerodrome)	-	10	(Not clear)	248.0
425	Kota	-	10	-do-	242.2
425	Chambal (Rawat Bhatta Dam)	-	10	-do-	230.5
425	Betul	-	14	2	21
426	Jamnagar Aerodrome	-	13	Not clear	11.0
426	Porbander Aerodrome	-	2	30.4	30.6
426	Veraval	-	27	0	1
426	Alibag	-	11	1035.7	1035.2
426	Devgarh	-	11	998.1	898.1
426	Jalgaon	-	27	3	0
426	Malegaon	-	27	5	0
426	Nagpur (Sonegaon)	-	3	0.0	0
426	Pusad	-	18	10.4	10.6
427	Kalingapatam	-	17	16.4	16.2
427	Rentachintala	-	12	-143.5	+143.5
427	Rangundam	-	9	8,16,28	8,16,18
427	Nizamabad	-	12	+346.8	+346.9
427	Mettur Dam R.S.	-	1	Mettur Dam	Mettur Dam R.S.
427	Reichur	-	14	24	25
428	Shimoga	-	3	..	0
428	Calicut	-	12	+194.3	+172.5
428	Dharmapur	-	21 to 28	dashes	Zeros
428	Hazari bagh	-	9	46,13	4,13
429	Rangarh	-	10	16.9	116.9
429	Panchet Hills	-	10	63.6	163.6
429	Thikri	-	13	7.0	37.0
429	Foot note	-	-	(e) † Data not available.	† Data not available.

Table III

430	Majbet	0830	20	(Not clear)	7
431	Imphal (Tulihal)	2330	5	981.8	918.8
431	Imphal (Tulihal)	2330	27	13	18
431	Kailashahar	0830	11	32	82
432	Cuttack	1730	18	2	22
434	Lucknow	0830	2	(Not clear)	0830
434	Lucknow (Amausi)	0230	2	0830	0230
434	Gorakhpur P.B.O.	1130	11	31	81

Page No.	Station	Hour	Column	For	Read
435	Agra	0830	15	0.0	0
435	Foot note	-	-	(R) Register not recorded	(R) Register not received.
436	Pathankot	1730	21	6	5
436	New Delhi (Safdarjung)	2330	10	32.2	33.6
436	Palam (Aerodrome)	0530	10	33.6	32.2
436	Foot note	-	-	*Data not available.	* Observations not recorded.
437	Mandi	0830	5	917.8	917.6
437	Mahajen	1730	13	.6	4.6
437	Churu	1730	4	964.6	996.3
437	Churu	1730	5	966.6	964.6
437	Jodhpur	0830	2	(Blank)	0830
438	Jaipur (Sangner)	0830	14	-1.0	+1.0
439	Nowgong	1730	8	25.6	26.6
439	Indore	0830	9	12.3	22.3
439	Chhindwara	0830	6	+0.9	-0.9
440	Raigarh	0830	1	(Not clear)	Raigarh
440	Raipur	0830	1	(not clear)	Raipur
440	Kanker	0830	7	27.7	25.7
440	Vallabh Vidyanagar	1730	28	9	0
440	Baroda Aerodrome	1130	3	34	"
440	Baroda	0530	3	"	34
440	Baroda	1730	3	11	"
440	Baroda	0830	6	..	-0.8
440	Broach	0830	6	..	-0.7
440	Broach	0830	12	..	0
440	Surat	0530	28	2	0
440	Surat	1730	28	..	0
440	Surat	2330	28	..	0
440	Naliya	1730	8	25.	25.3
440	Naliya	1730	11	7	71
441	Bhavnagar Aerodrome	1130	15	1.2	17.2
441	Bhavnagar Aerodrome	1730	23	0	7
441	Veraval	1730	25	Not clear	21
441	Foot note	-	-	(b) Mean of 29 days.	(b) Data for 29 days.
442	Devgarh	0830	14	+1.1	+0.1
442	Malegaon	0830	5	995.0	955.0
444	Masulipatam	0830	6	+ 0.8	-0.8
444	Madras (Minambakkam)	2330	8	2.9	24.9
444	Vellore	0830	6	..	0
445	Kallakurichohi	0830	13	67	57
447	Trivandrum	1130	15	14.2	11.2
447	Kalimpong	1730	4	(Blank)	1470.3
447	Kalimpong	1730	5	(Blank)	876.1
447	Abu	0830	3	119	1195
448	Daroi	1730	7	32.2	30.2
449	Foot note	-	-	† Observations for 39 days.	Delete

Page	Station	Time	Level	Element	Printed	Correct
451	Srinagar	0530*	-	Time	0530	0530* (Time with * mark)
451	Srinagar	1730*	-	Time	1730	1730* (Time with * mark)
452	Allahabad	1730*	0.9	v	1.0	1.6
454	Bareilly	1730	Surf.	v	8.0	0.8
455	Bhubaneshwar	2330	3.6	D	237	037
456	Bikaner	2330	-	Time	2330*	2330 (Delete * mark)
456	Bombay	1130	Surf.	D	262	267
456	Cochin	1730	-	Time	1130	1730
457	Cochin	2330	-	Time	2330*	2330 (Delete * mark)
457	Dibrugarh	0530	2.1	v	1.7	0.7
457	Dibrugarh	1130	3.6	v	2.2	2.0
457	Gadag	0530	6.0	v	2.2	2.0
460	Jodhpur	0530*	-	Time	0530	0530* (Time with *mark)
462	Nagpur	1730*	-	Time	1730	1730* (Time with *mark)
463	Port Blair	1730*	-	Time	1730	1730* (Time with *mark)
463	Port Blair	2330	0.6	D	338	238
463	Raipur	2330	0.9	v	6.3	5.3
463	Raxaul	0530	2.1	V	680	6.0
464	Siliguri	2330	1.5	V	4.9	4.0
465	Veraval	2330	0.9	D	260	265
467	Dibrugarh	1730	-	Time	0530	1730

Radiosonde Data

470	Calcutta	-	00 Z	70 mb.	Max	911	211
470	Gauhati	-	00 Z	175 mb	Max	4	244

Errata for M.W.R. for September 1963.

Page	Station	Hour	Column	For	Read
<u>Division</u>					
479	4 Bihar	-	2	+28.3	+28.2
<u>Sub-Division</u>					
479	28 Interior Mysore(North)	-	2	+102.0	-102.0
480	Pesighat	-	10	88.9	89.9
481	Motihari	-	3	2.1	-2.1
482	Fatehpur	-	13	44.	44.5
482	Pathankot	-	12	-99.4	-92.4
482	Gularg	-	24	9	0
482	Banihal	-	8	-6.8	6.8
483	Gwalior	-	5	34	24
483	Bhopal (Bairagarh)	-	13	71.1	71.4
483	Ujjain	-	20(a)	Blank	1
483	Raipur	-	13	126.4	126.8
483	Foot note	-	-	(d)Mean of 24 days.	(d)Mean of 27 days.

Page	Station	Hour	Column	For	Read
484	Ahmedabad	-	6	32.2	23.2
484	Mahuwa	-	15	(Not clear)	3.4
484	Parbhani	-	11	110.4	110.8
484	Nander	-	24	8	0
484	Bir	-	22	6	0
485	Heading	-	-	-	Table II etc.
485	Akola	-	12	109.0	-109.0
485	Nizamabad	-	26	2	0
485	Nizamabad	-	27	2	0
485	Bhadrachalam	-	9	20	29
485	Madras (Minambakkam)	-	24	8	0
485	Tuticorin	-	9	4	4 days.
487	Aijal	-	5	12,13	11,12,13
487	Panchet Hills	-	13	33.8	33.0
487	Khijrawan	-	9	21,21,30	,21,22,30

Table III

489	Dibrugarh (Mohanbari)	0530	8	42.0	24.0
489	Gauhati	0830	7	9.7	29.7
491	Jharsuguda	0230	11	84	94
491	Jharsuguda	0830	20	2	3
491	Jharsuguda	0830	22	3	2
491	Balsore	1730	13	6.5	6.5 (b)
491	Balsore	1730	15	59	5.9 (b)
491	Sambalpur	0830	6	-1.7 (b)	-0.7
491	Sambalpur	0830	13	5.2 (b)	5.2
491	Sambalpur	0830	15	8.3 (b)	8.3
492	Phulbari	0830	17	5	0 (a)
492	Motihari	0830	13	3.8 (e)	3.8 (a)
492	Forbesganj	0830	13	4.0 (e)	4.0
492	Forbesganj	1730	10	(not clear)	30.7
492	Foot note	-	-	(Blank)	(e) Mean of 28 days
493	Furnea	0830	4	1016.5	1006.5
493	Kheri	0830	15	2.7	2.1
493	Bahraich	0830	22	Blank	3
493	Gonda	0830	24	3	2
493	Lucknow	1730	7	0.4	30.4
494	Sultanpur	1730	10	23.8	32.8
494	Allahabad (Bamhraul)	0230	1	Allahabad (Bam- rauli)	Allahabad (Bamhraul)
494	Allahabad (Bamhraul)	0830	8	35.2	25.2
494	Allahabad (Bamhraul)	1730	18	13	18
494	Varanasi (Babatpur)	1130	28	0	1
494	Varanasi (Babatpur)	1730	26	0	6
495	Agra	0530	5	984.4	984.8
495	Pathankot	1730	7	21.3	31.3
495	Amritsar (Rajasansi)	0530	1	Read Station name after 2330 hours.	

Page	Station	Hour	Column	For	Read
495	Amritsar (Rajasansi)	1130	7	20.8	30.8
495	Ambala (F.B.O)	1130	9	23.3	22.3
495	Ambala (F.B.O)	0530	15	3.4	3.7
495	Patiala	0830	8	74.0	24.0
496	Jammu	0830	16	0	..
496	Jammu	0830	17	0	..
497	Nagaur	0830	8	24.5	24.4
497	Jodhpur	1730	7	32.4	32.9
497	Kota	1730	10	2.3	25.3
498	Jhalawar	0830	24	0	10
498	Ujjain	1730	4	1005.8	1005.8 (1) (2)
498	Ujjain	1730	5	952.1 (R)	952.1
498	Narsinghpur	0830	8	28.7	23.7
498	Chhindwara	1730	9	19.3	19.2
498	Foot note	-	-	(Blank)	(.) Mean of 19 days.
499	Raipur	0830	8	74.4	24.4
499	Ahmedabad	0230	1	Ahmedabad	Ahmedabad
499	Ahmedabad	0830	4	07.8	1007.8
499	Dohad	1730	9	30.8	20.8
499	Baroda (Aerodrome)	1730	11	66	68
500	New Kandla	1730	25	11	14
500	Keshod	1130	8	24.5	24.4
501	Nandurbar	0830	5	985.2	985.0
501	Malegaon	1730	14	0	..
502	Kolhapur	2330	11	93.	92
502	Akola	0830	7	25.4	25.5
502	Bramhapuri	0830	9	(Not clear)	23.9
502	Yeotmal	0830	14	-0.4	+0.4
502	Pusad	1730	9	21.2	21.5
502	Foot note	-	-	(Blank)	*Estimated.
503	Vishakhapatnam	2330	4	.3	1006.3
503	Gannavaram	0230	1	Gannavara	Gannavaram
503	Gannavaram	0230	28	1	0
503	Nagarjuna Konda	0830	1	Nayarjunakonda	Nagarjuna Konda
503	Read Nagarjuna Konda after Gannavaram.				
503	Anantpur	1730	8	22.6	22.9
504	Coimbatore (Pilamedu)	0830	5	955.5	965.5
504	Madurai Aerodrome	1130	20	6	3
505	Madurai Aerodrome	1730	1	Madras (Aero-drome)	Madurai Aerodrome.

Page	Station	Hour	Column	For	Read
505	Madurai Aerodrome	1730	15	21.	21.9
505	Mangalore (Bajpe)	0230	9	23.5	23.0
506	Calicut	1730	25	10	16
506	Funalur	0830	18	13	3
506	Mussoorie	0830	12	+7	-7
507	Kohima	1730	5	459.6	859.6
507	Lachen	0830	28	0	..
507	Durgapur	0830	26	0	1
508	Jomson	0830	7	18.9	18.0
508	Fokhara	0830	7	23.3	23.8
508	Fokhara	1130	9	20.0	20.3
508	Nuwakot	1730	9	20.5	20.5 (b)
508	Chainpur	0830	28	0	..
508	Chainpur	1730	28	0	..
508	Foot note	-	-	(Blank)	‡ Data not available

Page	Station	Time	Level	Element	Printed	Correct
511	Ahmadabad	2330	1.9	Ht.	1.9	0.9
515	Bikaner.	1730	0.15	n	22	30
515	Bikaner	2330	1.5	v	1.7	1.2
516	Dibrugarh	1730	0.6	D	011	081
516	Gangtok	1730	7.2	v	1.0	15.0
517	Gopalpur	0530	4.5	n	7	17
517	Gopalpur	1730	0.6	D	331	231
521	New Delhi	0530*	1.5	n	39	30

Radiosonde data

530	Allahabad	00 Z	300 mb	Max.	260	250
531	Nagpur	00 Z	Surf.	Surf. Pr.	977	970
531	New Delhi	00 Z	700 mb.	Dew Point	270.9	276.0
531	New Delhi	00 Z	600 mb.	-do-	(Blank)	270.9
534	Jodhpur	12 Z	175 mb.	Ht gpm.	13001	13301
534	Minicoy	12 Z	400 mb.	Mean	275.5	257.5
535	Trivandrum	12 Z	200 mb.	Max.	228	227.

TABLE I—DIVISIONAL AND SUB-DIVISIONAL MEANS—JULY, 1963 (ASADHA—10—SRAVANA 9, 1885 SAKA)

I	Rainfall (millim- etres)	Per- centa- ge of normal	Mean maxi- mum tem- per- ature °C	Mean mini- mum tem- per- ature °C	Relative%		Cloud		I	Rainfall (milli- metres)	Per- centa- ge of normal	Mean maxi- mum tem- per- ature °C	Mean mini- mum tem- per- ature °C	Relative Humidity%		Cloud		
					0830 hrs. IST	1730 hrs. IST	0830 hrs. IST	1730 hrs. IST						0830 hrs. IST	1730 hrs. IST	0830 hrs. IST	1730 hrs. IST	
																		6	7	8	9
DIVISION																		
1. Assam (Including Manipur and Tripura)	452.9 +64.2	117	31.4 +0.2	25.1 +0.4	87 +2	81	7.1 +0.4	5.7	Division—Contd.	8. Rajasthan	115.6 -38.6	75	36.8 +1.8	26.9 +0.7	68 -5	49	4.7 -0.1	4.5
2. West Bengal	364.0 -56.5	87	31.8 +0.1	26.1 +0.3	84 0	81	6.3 -0.2	6.3	9. Madhya Pradesh	294.2 -85.7	77	31.3 +0.9	23.7 -0.1	84 0	73	7.0 +0.4	7.0	
3. Orissa	293.9 -59.7	83	30.5 -0.1	24.8 -0.2	86 +3	84	7.2 +1.0	7.3	10. Gujarat State	184.6 -86.8	68	33.1 +1.0	26.0 +0.2	83 -1	68	6.2 -0.2	6.0	
4. Bihar	312.5 9.0	97	32.1 +0.2	25.4 -0.1	83 +1	80	6.8 +0.5	6.9	11. Maharashtra State	468.3 +14.9	103	30.5 +0.5	23.2 +0.1	84 +1	73	6.7 0	7.0	
5. Uttar Pradesh	283.6 32.3	90	34.1 +0.6	26.0 -0.2	81 +2	68	5.6 +0.1	5.6	12. Andhra Pradesh	169.7 +4.1	102	32.9 +0.1	25.0 0	77 +1	64	6.5 +0.1	6.6	
6. Punjab (India) In- cluding Himachal Pradesh and Delhi*	129.8 -109.5	54	36.8 +1.4	26.2 +0.1	72 -2	55	-3.6 +0.8	3.7	13. Madras State	71.7 +18.4	135	34.4 0	25.3 -0.1	69 +3	59	5.8 +0.9	6.1	
7. Jammu and Kash- mir	68.6 -34.9	66	29.3 +1.2	14.9 -1.4	58 -11	47	2.7 +0.9	3.5	14. Mysore	277.3 -81.5	77	29.0 +0.6	21.8 +0.5	86 +3	71	7.1 +0.5	7.3	
15. Kerala	582.5 +43.0	108	29.1 +0.5	23.5 +0.1	91 +2	85	6.7 -0.3	7.1										
Sub Division									Sub Division—contd.									
1. Bay Islands	326.8 -65.1	83	29.1 +0.3	24.6 +0.7	86 +2	88	6.9 +0.3	7.5	16. Madhya Pradesh (East)	326.6 -97.4	77	30.7 +0.6	23.6 -0.1	85 +1	78	7.0 +0.3	7.2	
2. Assam (Including Manipur, Tripura)	452.9 +64.2	117	31.4 +0.2	25.1 +0.4	87 +2	81	7.1 +0.4	5.7	17. Gujarat Region	319.2 -24.3	93	32.9 +1.0	25.2 0	85 -1	66	6.5 -0.3	6.0	
3. Sub-Himalayan, West Bengal.	635.7 -50.5	93	30.7 -0.8	25.4 +0.1	88 +2	81	7.1 +1.0	6.1	18. Saurashtra and Kutch.	109.8 -121.5	47	33.3 +1.0	26.5 +0.3	82 -1	70	6.0 -2	6.0	
4. Gangetic, West- Bengal.	265.2 -58.7	82	32.2 +0.4	26.4 +0.4	83 0	82	6.1 -0.5	6.3	19. Konkan	922.6 +102.9	113	29.3 +0.2	24.6 +0.2	89 +3	85	7.3 +0.1	7.3	
5. Orissa	293.9 -59.7	83	30.5 -0.1	24.8 -0.2	86 +3	84	7.2 +1.0	7.3	20. Madhya Mahara- shtra.	336.6 +25.0	108	30.3 +0.6	22.0 -0.2	83 +3	70	6.4 +0.1	6.8	
6. Bihar Plateau	319.2 -27.9	92	31.6 +0.5	24.7 0	82 0	81	6.8 +0.5	7.2	21. Marathwada	211.5 +23.5	113	31.1 +0.2	22.2 0	83 +1	65	6.5 -0.2	7.0	
7. Bihar Plains	308.5 +2.4	101	32.5 0	26.1 -0.1	84 +2	79	6.8 +0.6	6.7	22. Vidarbha	246.5 -88.0	74	31.4 +0.7	23.9 +0.2	82 -1	69	6.6 0	7.1	
8. Uttar Pradesh, East	310.2 -11.4	96	33.5 +0.2	25.8 -0.5	84 +3	70	6.5 +0.9	6.0	23. Coastal Andhra Pradesh.	146.6 -0.8	99	33.2 -0.2	25.8 -0.1	78 +2	68	6.4 0	6.6	
9. Uttar Pradesh, West.	243.7 -63.7	79	35.0 +1.3	26.2 +0.3	78 0	64	4.2 -1.1	4.8	24. Telangana	233.0 -2.2	99	31.8 +0.3	24.0 +0.1	79 +1	65	6.8 +0.4	7.0	
10. Punjab (India) (In- cluding Delhi).	129.8 -109.5	54	36.8 +1.4	26.2 +0.1	72 -2	65	3.6 -0.8	3.7	25. Rayalaseema	118.4 +25.9	128	33.9 +0.2	24.7 +0.3	71 +1	51	6.3 0	6.1	
11. Himachal Pradesh	443.4 ..	..	..	..	..	..	..	..	26. Madras State	71.7 +18.4	135	34.4 0	25.3 -0.1	69 +3	59	5.8 +0.9	6.1
12. Jammu and Kash- mir	68.6 -34.9	66	29.3 +1.2	14.9 -1.4	58 -11	47	2.7 -0.9	3.5	27. Coastal Mysore	823.6 -216.9	79	29.2 +0.8	23.9 +0.2	90 0	84	7.4 +0.2	7.4	
13. Rajasthan, West	22.8 -59.5	28	39.5 +2.3	28.4 +1.1	64 -5	38	3.7 -0.3	2.5	28. Interior Mysore North.	112.9 -58.7	66	30.2 +0.6	21.9 +0.6	84 +3	65	7.3 +1.3	7.4	
14. Rajasthan, East	208.4 -17.8	92	34.6 +1.4	25.8 +0.3	70 -5	58	5.6 +0.2	6.1	29. Interior Mysore, South.	184.0 -43.2	81	27.9 +0.6	20.7 +0.5	87 +4	70	6.8 0	7.1	
15. Madhya Pradesh (West).	268.7 -76.5	78	31.7 +1.1	23.8 0	383 -1	70	6.9 +0.4	6.9	30. Kerala	582.5 +43.0	108	29.1 +0.5	23.5 +0.1	91 +2	85	6.7 -0.3	7.1	
									31. Arabian Sea Is- lands.	366.9 +104.4	139	30.1 +0.6	25.1 -0.3	83 +2	81	6.7 +0.9	7.1	

NOTE.—The entries in the second line for each division and sub-division indicate departures from normal.
*Data of Himachal Pradesh not included.

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—JULY, 1963 (ASADHA 10, SRAVANA 9, 1885 SAKA)

Sub-Division and station	Hours of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)			Wind speed (Km. p.h.)			No. of observations									
			At mean sea level or height in g.p.m. of nearest standard isobaric level	tion level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal	Mean wind speed, kms. per hour	Wind direction			N	NE	E	SE	S	SW	W	NW	Calm	Variab
															62 or more	20 to 61	1 to 19										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Hydrometeorological Observatories—																											
<i>(contd.)</i>																											
Ghagara Catchment																											
<i>(contd.)</i>																											
Sallayana	0830	..	..	..	..	23.0	21.5	20.7	24.4	87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	22.4	21.0	20.3	23.8	88	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Butwal	0830	..	..	..	..	27.8	25.7	24.7	31.1	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	29.2	26.5	25.3	32.2	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bagmati Catchment																											
Katmandu‡	0830	1324																									
	1130	..																									
	1730	..																									
Kosi Catchment																											
Chautara	0830	..	..	..	..	21.2	20.6	20.4	24.0	95	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	22.6	21.2	20.5	24.1	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chepua	0830	..	..	..	..	19.2	18.1	17.6	20.1	91	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	19.1	18.5	18.2	20.9	94	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Walunchung Gola	0830	..	..	..	..	14.4	13.2	12.5	14.5	88	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	13.2	12.7	12.4	14.4	95	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplethok	0830	..	..	..	..	22.2	20.8	20.1	23.5	88	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	22.0	20.6	19.9	23.2	88	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur	0830	..	..	..	..	20.9	19.9	19.4	22.5	91	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	20.6	19.9	19.5	22.7	94	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung	0830	..	..	..	..	19.8	19.0	18.7	21.4	93	..	7.6	..	..	..	..	..	*0	0	0	0	0	0	1	0	30	0
	1130	..	..	..	..	22.1	20.0	19.0	22.1	83	..	7.1	..	..	..	..	..	*0	0	0	0	13	2	4	0	12	0
	1730	..	..	..	..	21.5	19.5	18.6	21.4	84	..	7.2	..	..	..	..	..	*0	0	0	1	9	6	2	0	13	0
Okhaldhnga	0830	..	..	..	..	19.7	19.0	18.7	21.6	94	..	7.3	..	0.9	0	0	8	0	0	1	1	2	1	3	0	23	0
	1130	..	..	..	..	22.2	20.5	19.9	22.9	87	..	6.5	..	1.7	0	0	18	0	0	0	1	7	4	6	0	19	0
	1730	..	..	..	..	20.2	16.3	19.0	21.8	93	..	7.1	..	1.8	0	0	13	0	1	0	2	2	1	6	1	18	0
Chainpur	0830	..	..	..	..	22.8	21.6	21.0	24.9	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	23.1	21.4	20.5	24.1	86	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angbung**	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barahakshetra	0830	146	1000.5	984.4	..	27.4	25.9	25.3	32.2	88	..	6.7	..	1.9	0	0	20	0	1	0	1	0	9	1	8	11	0
	1130	..	999.6	985.3	..	29.1	26.5	25.6	32.4	82	..	6.9	..	3.2	0	0	26	0	2	1	1	0	17	2	3	5	0
	1730	..	997.2	981.8	..	28.4	26.6	25.8	33.4	87	..	6.4	..	2.3	0	0	19	0	2	0	2	9	11	0	4	12	0
Tista Catchment																											
Gangtok	0830	1812	1434.8	813.9	..	19.1	18.5	18.2	20.9	94	..	7.7	..	0.6	0	1	4	1	3	0	0	0	0	0	1	26	0
	1130	..	1427.8	813.5	..	21.1	19.8	19.2	22.1	89	..	7.1	..	2.3	0	0	19	2	6	0	0	2	8	1	0	12	0
	1730	..	1412.5	817.0	..	20.2	19.2	18.7	21.6	92	..	7.6	..	1.1	0	0	8	0	2	0	2	2	1	1	0	23	0
Gezing	0830	..	..	..	..	20.6	20.0	19.7	22.9	95	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	21.5	20.3	19.8	23.1	90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

‡Data included under Nepal.

*Estimated.

** Data not available.

MONTHLY MEANS OF UPPER WINDS

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 39 stations all the observations were taken by means of pilot balloons and at 15 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk(*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n—represents the number of observations;

V—represents the mean wind speed in metres per second irrespective of direction;

v—represents the resultant mean velocity in metres per second;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0, and 36.0 km. a.m.s.l. Of these levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

Sl. No.	Station	Lat. N	Long. E.	Height of Anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
1.	Agartala	23 53	91 15	17	28th November, 1951	0530		1730	2330
2.	Ahmadabad	23 04	72 38	61	19th May, 1928	0530*	1130	1730*	2330
3.	Allahabad/Bamhrauli	25 27	81 44	103	28th February, 1930	0530*	1130	1730*	2330
4.	Ambala	30 23	76 46	279	1st April, 1941	0530	1130	1730	2330
5.	Anantapur	14 41	77 37	365	12th February, 1946	0530		1730	2330
6.	Asansol	23 41	86 59	135	29th May, 1942	0530		1730	2330
7.	Aurangabad/Chikalthan	19 51	75 24	583	7th October, 1951	0530		1730	2330
8.	Bahraich	27 34	81 36	134	1st October, 1961	0530		1730	
9.	Bangalore	12 58	77 35	936	19th May, 1915	0530@	1130	1730@	2330
10.	Bareilly	28 22	79 24	181	12th January, 1943	0530		1730	
11.	Begampur	17 27	78 28	543	1st September, 1929	0530		1730	2330
12.	Bhagalpur	25 14	86 57	61	19th May, 1950	0530		1730	
13.	Bhopal/Bairagarh	23 17	77 21	532	26th February, 1943	0530		1730	2330
14.	Bhubaneswar	20 15	85 50	54	5th December, 1942	0530		1730	2330
15.	Bhuj/Rudramata	23 15	69 48	90	14th September, 1937	0530		1730	2330
16.	Bikaner	28 00	73 18	229	18th October, 1946	0530		1730	2330
17.	Bombay/Santa Cruz	19 07	72 51	27	14th May, 1933	0530*	1130	1730*	2330
18.	Calcutta/Dum Dum	22 39	88 27	13	14th May, 1921	0530*	1130	1730*	2330
19.	Cochin/Willingdon†	09 56	76 14	13	16th March, 1942	0530		1730	2330
20.	Dehra Dun	30 19	78 03	692	1st October, 1958	0530		1730	
21.	Dibrugarh/Mohanbari	27 29	95 01	112	1st June, 1948	0530	1130	1730	2330
22.	Gadag	15 25	75 33	650	3rd May, 1943	0530		1730	2330
23.	Gangtok	27 20	88 37	1778	1st June, 1963	0530		1730	
24.	Gauhati	26 05	91 43	55	12th March, 1955	0530*	1130	1730*	2330
25.	Gaya	24 45	84 57	119	19th March, 1937	0530		1730	2330
26.	Gopalpur	19 16	84 53	24	15th February, 1946	0530		1730	2330
27.	Gorakhpur	26 45	83 22	83	5th January, 1943	0530		1730	
28.	Gwalior	26 14	78 15	208	7th May, 1938	0530	1130	1730	2330
29.	Imphal/Tulihal	24 46	93 54	782	8th March, 1952	0530	1130	1730	2330
30.	Jabalpur	23 10	79 57	402	30th July, 1928	0530		1730	2330
31.	Jagdalpur	19 05	82 02	562	25th March, 1948	0530		1730	2330
32.	Jaipur/Sanganer	26 49	75 48	403	6th June, 1953	0530		1730	2330
33.	Jamshedpur	22 49	86 11	144	23rd July, 1942	0530		1730	
34.	Jharsuguda	21 55	84 05	240	1st May, 1944	0530		1730	2330
35.	Jodhpur	26 18	73 01	229	15th October, 1934	0530*	1130	1730*	2330
36.	Lucknow/Amausi	26 45	80 53	133	20th November, 1950	0530		1730	2330
37.	Madras/Minambakkam	13 00	80 11	29	8th April, 1926	0530*	1130	1730*	2330
38.	Mangalore/Bajpe	12 55	74 53	104	25th May, 1959	0530		1730	2330
39.	Minicoy	08 18	73 00	15	14th April, 1941	0530		1730*	2330
40.	Nagpur/Sonegaon	21 06	79 03	316	23rd April, 1943	0530*	1130	1730*	2330
41.	New Delhi/Safdarjung	28 35	77 12	227	20th October, 1936	0530*	1130	1730*	2330
42.	Poona	18 32	73 51	593	5th January, 1925	0530		1730	2330
43.	Port Blair	11 40	92 43	95	29th October, 1945	0530*	1130	1730*	2330
44.	Raipur	21 14	81 39	308	15th July, 1944	0530		1730	2330
45.	Raxaul	26 59	84 51	83	28th October, 1957	0530		1730	
46.	Siliguri/Baghdogra	26 38	88 19	140	7th June, 1953	0530		1730	2330
47.	Srinagar	34 06	74 48	1603	1st August, 1962	0530*		1730*	
48.	Tiruchirappalli	10 46	78 43	96	22nd June, 1936	0530		1730	2330
49.	Trivandrum	08 29	76 57	73	8th December, 1928	0530*	1130	1730*	2330
50.	Udaipur	24 35	73 42	587	24th June, 1947	0530		1730	2330
51.	Vengurla	15 52	73 38	8	22nd November, 1941	0530		1730	2330
52.	Veraval	20 54	70 22	17	13th October, 1941	0530		1730	2330
53.	Vijaywada/Gannavaram	16 32	80 48	32	8th April, 1942	0530		1730	2330
54.	Vishakhapatnam	17 43	83 14	10	24th September, 1928	0530*	1130	1730*	2330

* Radio wind ascents.
 @ Radiosonde ascents followed by optical theodolite.
 † Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	AGARTALA												AHMADABAD															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.7	2.6	137	31	3.0	2.7	156	31	3.1	2.5	153	31	2.3	2.0	235	29	3.1	2.7	239	31	3.2	2.7	230				
0.15 a.g.	27	6.7	6.1	150	28	5.9	5.4	165	29	7.5	7.3	165	31	6.6	5.9	243	29	6.0	5.5	240	31	5.8	4.8	240				
0.3 a.m.s.l.	27	8.5	8.0	167	28	7.2	6.7	170	29	8.7	8.4	177	31	7.3	6.4	246	29	5.8	5.2	245	31	5.8	4.9	239				
0.6 "	27	9.5	8.6	174	27	7.9	7.4	175	27	9.6	9.1	187	30	9.4	8.5	256	29	6.0	5.3	252	31	6.5	5.8	240				
0.9 "	21	8.1	7.3	178	22	8.4	8.0	175	24	9.1	8.4	187	30	10.0	9.2	261	24	7.1	6.4	257	31	7.2	6.3	247				
1.5 "	22	7.1	6.0	179	21	8.3	7.5	173	22	7.8	6.8	186	30	9.3	6.5	254	16	7.5	5.9	255	31	6.9	5.5	258				
2.1 "	20	5.8	4.3	175	15	6.9	6.0	168	20	7.1	5.9	181	31	8.5	3.0	245	10	6.7	0.7	209	31	7.7	4.1	276				
3.0 "	17	5.9	4.0	159	15	6.4	5.4	162	14	6.2	4.5	167	31	6.9	1.3	071	3	11.0	10.5	075	31	7.1	1.9	331				
3.6 "	13	6.5	4.9	154	9	5.1	4.0	175					31	6.5	3.2	056	1	18.0	18.0	085	31	6.4	2.1	030				
4.5 "	5	4.4	3.3	130	7	4.7	3.2	159					31	6.6	3.3	047					31	5.3	1.9	050				
5.4 "	3	4.0	2.2	152	4	5.3	3.2	137					31	6.6	3.9	047					31	5.3	2.5	033				
6.0 "	2	5.0	3.1	131	4	4.4	3.2	119					31	5.7	3.6	048					31	5.6	2.4	060				
7.2 "													31	7.0	6.2	067					31	6.6	5.0	077				
9.0 "													28	8.9	7.5	086					28	8.2	7.2	084				

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA											
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.1	3.6	215	31	1.3	0.2	222	31	2.0	0.8	265	31	1.5	0.3	280	31	1.3	0.5	131	31	2.4	2.0	114				
0.15 a.g.	27	8.0	7.1	222	30	5.2	2.1	223	29	5.1	1.6	256	31	4.7	1.0	284	27	6.2	2.1	172	30	8.1	6.6	116				
0.3 a.m.s.l.	27	9.0	8.1	224	30	5.3	2.2	225	29	5.5	1.8	258	31	5.0	1.2	279	27	6.5	2.0	167	30	4.1	3.3	111				
0.6 "	27	10.0	9.3	235	30	6.6	3.1	259	29	5.6	0.9	280	31	5.9	1.5	277	27	7.3	1.8	180	30	9.0	6.9	137				
0.9 "	25	8.8	8.1	246	30	7.4	3.5	275	24	6.7	2.1	290	31	6.2	1.7	289	26	6.6	2.1	212	30	8.1	5.7	151				
1.5 "	20	7.0	4.7	250	30	6.3	1.8	295	20	7.0	1.5	329	30	6.8	1.9	290	22	5.3	1.5	265	29	7.2	3.1	207				
2.1 "	10	5.5	1.5	037	30	6.4	1.8	315	16	7.1	1.9	343	30	6.6	2.3	301	17	5.9	2.7	290	23	6.0	3.5	298				
3.0 "	6	4.4	3.7	081	30	6.5	2.0	007	9	7.3	2.0	349	30	6.8	2.5	305	12	5.5	3.7	340	19	8.7	7.5	320				
3.6 "	2	2.3	1.9	344	29	5.6	1.8	048	4	5.1	4.2	318	30	6.4	1.3	002	1	5.0	5.0	020	17	8.4	6.4	331				
4.5 "					29	5.6	1.7	058	2	4.5	4.5	327	30	6.4	1.7	042					15	7.2	4.8	329				
5.4 "					28	5.8	2.4	090	1	1.0	1.0	255	30	6.2	2.6	076					6	4.9	2.3	211				
6.0 "					28	5.8	3.3	095	1	1.0	1.0	255	30	6.1	3.1	072					6	8.2	6.1	196				
7.2 "					27	6.5	4.5	105					30	6.6	3.3	093					2	4.0	3.9	223				
9.0 "					22	7.3	6.0	105					23	8.3	7.3	089					2	6.5	4.2	248				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Āṣadha 10—Sṛavana 9, 1885 Śaka)

Station	AMBALA												ANANTAPUR															
	1130				1730				2330				0530				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.2	1.8	122	31	1.7	0.6	064	31	2.0	1.4	127	31	3.7	3.5	255	31	5.9	5.4	273	31	6.2	6.0	265				
0.15 a.g.	30	6.0	4.8	115	30	4.7	1.5	048	31	7.0	4.5	120	30	8.1	8.0	250	30	10.6	10.0	268	24	9.7	9.6	256				
0.3 a.m.s.l.	30	3.7	2.8	114	30	2.7	0.8	067	31	3.3	2.1	119																
0.6 "	30	6.7	5.4	123	30	4.6	1.0	048	31	6.6	4.1	127	30	9.8	9.7	253	30	10.4	10.0	265	24	10.3	10.1	257				
0.9 "	30	6.2	4.2	134	30	4.4	0.7	351	31	5.6	2.9	140	30	12.7	12.4	266	28	11.1	10.7	265	24	12.1	12.0	263				
1.5 "	27	5.7	1.3	217	30	5.2	5.4	287	31	5.2	1.7	270	29	14.8	14.2	274	25	12.0	11.6	268	22	12.5	12.3	270				
2.1 "	22	5.9	2.3	298	26	6.6	5.6	306	28	5.5	3.7	289	27	12.5	12.2	273	19	10.9	10.5	269	20	10.1	9.9	276				
3.0 "	20	6.9	4.2	320	21	7.1	6.3	312	24	5.9	4.0	306	20	8.1	7.7	277	6	8.8	8.5	285	9	5.7	4.6	290				
3.6 "	15	7.3	4.1	336	17	7.3	6.2	319	8	8.6	7.4	323	16	6.2	5.8	281	5	6.6	5.9	299	7	4.9	4.8	295				
4.5 "	8	7.2	5.4	348	10	8.0	5.0	329					10	5.1	3.7	285	1	6.0	6.0	330	4	4.7	2.8	316				
5.4 "	3	6.3	4.8	245	5	5.3	1.3	284					6	4.2	2.6	313					1	4.5	4.5	230				
6.0 "	2	6.7	4.8	244	3	5.2	3.7	273					2	4.5	3.3	286												
7.2 "					1	8.0	8.0	275					1	4.0	4.0	195												
9.0 "													1	10.5	10.5	145												

Station	ASANSOL												AURANGABAD/CHIKALTHAN															
	0530				1730				2330				0530				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.1	0.5	163	31	1.5	0.6	165	31	1.1	0.8	169	31	3.2	3.1	265	31	5.9	5.0	267	31	4.6	4.5	279				
0.15 a.g.	27	4.7	2.4	214	30	5.4	2.5	152	29	5.7	3.4	163	28	8.0	7.5	266	29	9.2	8.3	265	27	9.4	9.0	266				
0.3 a.m.s.l.	27	4.9	2.7	217	30	5.6	2.5	150	29	5.9	3.4	165																
0.6 "	27	6.3	3.8	252	30	6.3	2.8	145	29	6.7	3.3	174																
0.9 "	26	6.8	4.2	267	30	6.5	2.2	152	28	7.0	2.7	189	28	10.2	9.7	268	29	9.9	9.3	274	27	11.4	10.9	272				
1.5 "	24	5.9	2.8	276	25	5.9	1.2	170	25	6.1	1.5	222	25	13.7	13.0	274	27	9.9	9.3	271	27	12.6	12.2	272				
2.1 "	19	5.6	2.0	301	22	5.1	1.4	212	20	5.3	1.3	233	18	9.9	9.3	275	16	9.1	8.6	276	19	11.0	10.7	277				
3.0 "	12	5.2	0.2	121	15	4.8	1.1	175	13	4.3	1.7	197	9	3.7	2.7	282	3	4.2	3.8	261	10	5.5	4.1	276				
3.6 "	5	4.1	2.2	210	13	4.4	0.2	101	11	3.5	2.1	220	2	3.7	3.7	306					4	4.0	1.9	327				
4.5 "	5	4.5	1.9	177	10	5.4	1.2	089	7	3.5	1.7	171																
5.4 "	3	5.8	3.6	129	5	8.1	7.5	090	4	3.7	1.9	190																
6.0 "	3	6.0	3.0	138	3	6.2	6.0	063	3	5.5	2.7	153																
7.2 "	2	6.0	3.5	125	1	12.0	12.0	080	2	4.7	4.4	069																
9.0 "	1	4.0	4.0	110	1	18.0	18.0	085																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR			
	0530				1730				0530				1730				2330				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.0	0.7	106	31	1.5	0.8	082	31	3.9	3.6	260	31	5.0	4.0	265	31	3.4	3.0	245	31	2.9	1.7	225
0.15 a.g.	25	4.6	2.8	115	30	4.3	2.6	081	26	9.6	9.0	257	29	8.2	6.4	265	25	8.8	8.2	252	21	5.9	4.6	234
0.3 a. m.s.l.	25	4.8	2.9	125	30	4.6	2.8	088													21	7.0	5.6	249
0.6 „	25	5.2	2.7	140	30	5.2	2.9	116	26	8.0	7.3	253	29	7.2	5.5	259	25	7.6	6.9	248	19	8.0	6.8	256
0.9 „	25	5.2	2.7	123	29	5.7	3.3	127	24	12.1	11.2	273	28	8.0	6.7	273	25	10.2	9.5	261	19	8.9	7.7	267
1.5 „	23	5.5	2.7	106	26	5.6	3.0	150	15	9.9	9.2	292	24	8.1	6.9	281	23	8.7	7.5	273	17	7.8	6.5	279
2.1 „	21	5.5	2.6	097	23	5.2	2.6	157	14	6.7	4.6	325	19	6.1	4.5	291	13	7.7	4.0	288	11	5.8	4.3	280
3.0 „	18	5.0	2.6	125	20	4.7	2.3	146	9	5.9	4.3	026	8	6.6	3.3	360	8	5.9	3.0	045	7	4.2	3.1	306
3.6 „	12	4.2	1.5	142	20	4.8	2.6	129	5	6.7	6.0	034	4	8.1	5.9	030	4	6.7	5.5	077	3	3.7	2.2	029
4.5 „	10	3.7	0.3	263	14	5.4	2.1	106	2	6.0	5.9	050	1	10.5	10.5	355								
5.4 „	9	3.8	1.0	155	10	6.0	3.9	112	1	8.0	8.0	035												
6.0 „	7	4.3	2.2	156	9	6.1	3.5	100	1	8.0	8.0	035												
7.2 „	3	3.3	2.8	108	3	6.8	2.6	102																
9.0 „	1	8.0	8.0	120																				

Station	BHUBANESHWAR								BHUIJ/RUDRAMATA												BIKANER			
	1730				2330				0530				1730				2330				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	4.4	3.8	223	31	4.0	3.4	216	31	5.2	4.9	235	31	7.9	7.4	243	31	6.3	6.0	236	31	2.9	2.7	221
0.15 a.g.	19	6.0	5.7	215	23	7.6	7.0	223	31	7.5	7.1	240	29	10.8	10.4	242	31	8.9	8.9	239	31	9.8	8.6	235
0.3 a. m.s.l.	19	6.1	5.7	226	23	8.1	7.6	230	31	8.5	8.1	243	29	10.8	10.5	241	31	9.4	9.3	240	31	7.2	6.4	231
0.6 „	18	6.7	6.0	249	24	8.6	7.7	236	31	10.6	10.3	247	28	10.4	10.2	242	31	10.7	10.5	243	31	11.9	10.8	247
0.9 „	17	7.1	6.4	269	23	7.9	6.6	246	25	10.1	9.8	249	28	9.7	9.5	242	28	9.6	9.1	242	30	11.2	10.1	251
1.5 „	9	9.2	7.3	283	18	7.3	6.4	247	18	8.6	6.8	238	23	6.6	4.6	252	25	8.0	5.5	228	27	5.8	3.6	281
2.1 „	6	8.4	6.5	300	13	6.9	4.7	276	11	4.7	1.9	150	18	5.9	0.6	297	19	5.3	1.7	165	24	4.7	2.3	323
3.0 „	4	7.4	5.7	338	5	6.7	5.2	277	7	6.3	3.1	069	13	6.7	3.9	058	17	5.1	2.9	064	18	4.7	1.7	347
3.6 „	1	8.5	8.5	340	1	2.5	2.5	260	3	8.2	6.6	025	10	7.8	4.8	055	11	5.5	2.9	032	11	5.6	1.7	045
4.5 „									2	5.7	1.5	338	7	6.1	5.7	048	8	5.8	2.9	047	6	4.4	3.3	020
5.4 „													5	6.6	6.6	021	5	5.5	4.3	043	3	3.7	2.6	103
6.0 „													4	4.9	4.1	031	4	5.1	4.8	055	3	4.3	2.8	119
7.2 „													2	5.3	4.9	111					3	9.2	3.7	150
9.0 „													2	9.0	8.9	090					2	9.7	9.5	111

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadhā 10—Śravaṇā 9, 1885 Saka)

Station	BIKANER								BOMBAY/SANTACRUZ																			
	1730				2330				0530*				1130				1730*				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.9	1.5	212	31	3.0	2.6	187	31	5.1	4.3	262	31	4.8	3.9	254	31	4.7	4.4	265	31	4.3	3.5	239				
0.15 a.g. . . .	31	6.9	4.9	220	30	9.7	8.2	205	29	7.5	6.7	258	26	7.7	6.8	240	30	7.2	6.3	260	28	7.7	7.1	230				
0.3 a. m.s.l. . .	31	5.6	4.0	218	30	7.3	5.7	201	29	7.2	7.0	256	26	8.5	7.5	242	30	7.4	6.9	262	28	7.7	7.4	238				
0.6 „ . . .	30	6.6	4.0	223	30	10.7	8.9	212	28	8.1	7.8	256	23	10.0	9.0	247	30	8.7	7.5	265	26	8.3	7.9	244				
0.9 „ . . .	28	5.1	2.9	230	24	8.4	6.7	224	28	8.5	8.1	255	17	10.0	9.1	250	29	9.4	7.6	262	19	8.7	8.6	254				
1.5 „ . . .	27	5.3	3.0	255	21	5.7	2.6	281	27	9.1	8.6	260	7	7.9	7.5	250	28	9.2	3.1	263	9	8.0	7.9	257				
2.1 „ . . .	22	4.8	2.8	268	17	4.7	2.8	346	27	8.6	8.1	263	3	11.0	10.6	254	28	9.1	7.7	259	5	4.7	4.6	266				
3.0 „ . . .	16	3.8	2.9	357	14	7.0	4.0	020	27	7.7	6.2	270	1	5.0	5.0	245	28	9.0	6.5	265	5	4.5	2.9	249				
3.6 „ . . .	11	5.6	4.2	005	7	6.4	5.7	022	27	5.6	3.3	258	1	4.0	4.0	235	26	7.9	6.0	258	4	4.3	2.9	196				
4.5 „ . . .	10	6.3	5.0	350	1	7.0	7.0	020	26	5.2	1.8	260	1	6.0	6.0	250	26	7.0	3.8	252	3	3.2	0.9	156				
5.4 „ . . .	10	6.5	4.4	330					27	5.1	1.7	313	1	8.0	8.0	255	26	6.2	2.2	286								
6.0 „ . . .	9	4.3	1.9	320					27	5.1	1.6	300					26	6.0	1.6	338								
7.2 „ . . .	3	6.3	4.3	271					27	5.4	2.8	067					26	6.5	3.4	063								
9.0 „ . . .	2	8.2	2.5	250					25	7.7	6.8	084					23	9.2	7.9	080								

Station	CALCUTTA/DUM DUM								COCHIN/WILLINGDON†																			
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.5	0.9	171	31	2.5	0.9	193	31	2.4	2.0	180	31	2.1	1.7	180	31	0.6	0.5	028	31	2.5	2.1	286				
0.15 a.g. . . .	31	5.4	3.2	210	30	5.3	2.5	195	31	5.2	4.5	180	31	6.2	4.8	190	26	3.5	1.6	318	20	4.4	3.7	283				
0.3 a. m.s.l. . .	31	5.6	3.3	217	30	5.5	2.5	195	31	5.5	4.2	191	31	7.3	6.0	203	26	4.9	3.8	298	20	6.4	5.6	285				
0.6 „ . . .	31	6.3	3.6	220	28	6.2	2.5	197	31	6.2	4.0	193	29	7.6	6.0	208	26	7.6	7.0	295	20	9.2	8.2	290				
0.9 „ . . .	31	6.4	3.8	225	26	6.0	1.9	211	31	6.4	3.8	198	27	7.1	4.9	211	26	9.2	8.7	295	20	10.5	9.5	290				
1.5 „ . . .	31	5.9	3.4	230	15	6.6	0.7	169	31	5.8	2.8	194	27	6.8	4.1	209	22	9.9	9.7	298	18	10.9	9.4	290				
2.1 „ . . .	31	5.8	2.6	220	8	5.8	0.6	164	31	5.8	2.4	189	14	5.6	3.2	171	17	9.1	8.5	295	14	10.7	10.0	290				
3.0 „ . . .	31	5.8	2.6	200	2	4.3	3.9	057	31	5.5	2.4	172	6	3.8	3.5	219	12	6.6	6.1	300	7	10.4	9.1	285				
3.6 „ . . .	31	6.0	2.8	187	1	12.0	12.0	080	31	5.6	2.9	157					6	6.8	6.1	302	6	9.5	8.6	279				
4.5 „ . . .	31	5.6	2.0	155					30	5.8	3.3	146					3	7.9	6.3	271	3	4.0	3.9	305				
5.4 „ . . .	31	6.4	3.4	132					30	7.2	3.6	124					1	7.0	7.0	260								
6.0 „ . . .	31	6.7	4.1	123					30	7.0	4.5	118					1	4.0	4.0	200								
7.2 „ . . .	31	7.4	5.8	117					27	7.4	4.8	103																
9.0 „ . . .	30	10.6	10.1	104					26	9.3	7.0	093																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	COCHIN/ WILLINGDON †				DEHRADUN								DIBRUGARH/MOHANBARI															
	2330				0530				1730				0530				1130				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.0	0.3	332	31	0.4	0.2	140	31	0.5	0.1	164	31	0.8	0.4	325	31	0.8	0.3	059	31	0.7	0.5	061				
0.15 a.g. . . .	21	3.9	2.8	285	21	1.9	0.4	158	24	1.9	0.7	226	14	3.9	1.8	067	30	3.1	1.0	072	31	3.7	2.4	068				
0.3 a. m.s.l. . .	21	5.0	4.0	275									14	3.8	0.7	027	30	3.2	0.9	089	31	3.8	2.7	069				
0.6 „ . . .	21	8.0	7.1	291									13	3.8	0.5	107	30	3.3	1.0	196	31	3.8	2.0	089				
0.9 „ . . .	21	9.9	9.0	292	21	2.0	0.9	196	24	2.1	0.8	254	11	3.2	0.5	095	27	4.1	2.6	215	31	3.7	0.9	140				
1.5 „ . . .	18	9.9	9.2	295	17	3.0	1.2	214	24	3.1	2.4	272	7	3.1	1.0	136	16	4.6	3.1	208	27	4.1	2.8	222				
2.1 „ . . .	12	8.7	8.4	300	12	4.4	3.2	297	21	4.2	3.0	284	5	2.6	2.0	140	10	3.2	2.0	169	23	4.1	3.0	200				
3.0 „ . . .	7	7.2	7.2	300	2	3.5	0.2	057	17	5.0	2.5	287	4	2.2	1.0	133	4	5.7	2.8	184	22	4.6	3.6	216				
3.6 „ . . .									14	3.8	0.5	276	2	2.5	2.4	230	2	5.5	2.5	095	20	4.3	2.5	230				
4.5 „ . . .									13	3.0	2.0	250	1	3.0	3.0	210					15	3.6	2.1	208				
5.4 „ . . .									8	3.1	1.5	248									12	3.4	2.1	177				
6.0 „ . . .									7	4.7	3.5	234									10	2.7	1.5	156				
7.2 „ . . .									3	7.2	3.7	275									5	2.9	2.3	109				
9.0 „ . . .									1	10.0	10.0	250									4	4.0	3.5	076				

Station	DIBRUGARH/ MOHANBARI				GADAG								GANGTOK															
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.6	0.3	054	31	4.7	4.3	239	31	6.1	5.6	256	31	5.0	4.6	247	31	0.3	0.2	025	31	G	A	L	M			
0.15 a.g. . . .	27	3.2	0.2	041	31	9.8	9.6	250	31	11.4	11.0	257	31	10.4	10.3	249	7	2.0	1.6	020	6	1.6	1.2	180				
0.3 a. m.s.l. . .	27	3.2	2.0	031																								
0.6 „ . . .	27	3.0	1.9	084																								
0.9 „ . . .	27	3.0	1.2	114	31	12.0	11.6	263	31	11.8	11.5	260	31	11.7	11.5	258												
1.5 „ . . .	25	3.8	2.5	213	26	14.1	13.6	271	27	13.3	13.0	268	26	14.2	13.8	271												
2.1 „ . . .	22	4.7	3.6	223	16	10.5	10.0	275	15	10.6	10.3	282	20	10.8	10.5	278	7	1.5	0.8	340	6	1.7	0.9	175				
3.0 „ . . .	19	3.9	1.2	204	12	6.3	5.8	272	2	9.0	7.5	287	12	5.3	4.4	293	5	1.5	0.8	149	5	1.3	0.7	206				
3.6 „ . . .	10	5.2	3.0	180	9	5.5	5.2	257					9	4.4	3.9	307	5	3.2	1.7	099	3	1.7	1.6	228				
4.5 „ . . .					7	2.9	2.4	294					5	2.9	1.5	317	2	2.3	1.4	047								
5.4 „ . . .					7	3.6	2.7	349					2	2.3	1.7	349	1	3.0	3.0	120								
6.0 „ . . .					6	3.8	3.3	012					1	4.0	4.0	050	1	2.0	2.0	090								
7.2 „ . . .					3	4.3	4.2	024									1	5.5	5.5	105								
9.0 „ . . .					1	6.0	6.0	055																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

JULY, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	GAUHATI																GAYA											
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.1	0.1	338	31	1.4	0.9	005	31	0.6	0.1	258	31	0.7	0.2	129	31	1.8	0.5	120	31	2.8	1.2	064				
0.15 a.g. . . .	31	1.8	0.9	053	30	3.1	2.1	015	31	2.5	1.0	257	27	2.4	0.4	259	28	4.8	1.6	192	31	5.3	1.4	078				
0.3 a. m.s.l. . .	31	2.1	1.0	056	30	3.0	1.7	022	31	2.7	1.2	263	27	2.5	0.6	300	28	5.1	1.9	199	31	5.3	1.3	085				
0.6 ,, . . .	31	2.8	0.4	081	29	3.4	1.2	037	31	3.2	1.3	284	27	3.1	1.1	303	28	6.6	3.0	222	30	5.4	0.8	128				
0.9 ,, . . .	31	3.3	0.3	214	28	3.7	0.4	129	31	3.5	1.0	276	24	3.7	1.3	277	26	7.3	2.5	246	29	5.4	0.7	164				
1.5 ,, . . .	31	4.2	2.1	213	27	4.6	2.2	196	31	4.5	1.6	235	21	4.5	3.2	240	18	7.2	0.4	259	26	6.8	1.1	234				
2.1 ,, . . .	31	5.0	3.3	206	26	5.2	3.3	199	31	4.4	2.5	200	18	5.5	4.3	215	15	6.9	1.8	076	23	7.0	1.3	238				
3.0 ,, . . .	31	4.6	3.0	212	19	4.8	2.0	209	31	4.5	2.2	190	9	6.6	3.9	210	10	5.1	1.8	058	15	4.4	0.7	172				
3.6 ,, . . .	31	4.7	3.1	211	12	5.3	2.4	211	31	4.8	2.3	190	7	6.7	4.0	212	7	5.3	1.4	021	13	5.1	1.3	137				
4.5 ,, . . .	31	4.4	2.7	205	11	4.1	1.7	190	30	5.1	2.4	200	3	6.2	4.2	210	3	2.5	2.2	253	5	3.5	0.8	258				
5.4 ,, . . .	31	4.6	2.1	194	8	4.1	1.6	175	29	5.0	2.0	196	2	7.0	6.9	236	2	3.3	2.7	270	1	5.0	5.0	085				
6.0 ,, . . .	30	4.3	2.0	171	6	5.0	2.3	171	28	4.7	1.4	178	1	1.5	1.5	202	2	2.3	0.3	340	1	7.0	7.0	085				
7.2 ,, . . .	29	4.8	1.7	135	4	5.0	4.9	107	28	4.9	1.4	145	1	12.5	12.5	065					1	10.5	10.5	105				
9.0 ,, . . .	24	5.8	3.1	108		7.5	7.0	098	22	5.9	3.5	084																

Station	GAYA				GOPALPUR												GORAKHPUR											
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.9	0.4	164	31	3.3	2.9	209	31	6.1	6.1	205	31	4.4	4.2	203	31	1.2	0.8	075	31	1.2	0.8	086				
0.15 a.g. . . .	27	5.1	1.8	143	28	7.1	5.9	223	29	9.7	8.9	215	26	8.3	7.5	219	24	5.6	4.3	094	29	4.3	2.7	095				
0.3 a. m.s.l. . .	27	5.2	1.8	141	28	6.7	5.9	238	29	7.9	7.1	225	26	7.9	7.1	226	24	6.8	5.4	105	29	4.7	3.0	097				
0.6 ,, . . .	26	5.7	2.0	148	28	7.1	6.1	251	29	6.1	5.1	237	26	7.2	6.8	239	21	7.3	5.9	120	29	5.6	3.7	107				
0.9 ,, . . .	26	5.8	1.9	155	28	7.9	6.7	265	29	5.6	4.7	265	26	6.9	6.3	250	19	6.4	4.3	119	29	5.9	3.9	115				
1.5 ,, . . .	24	5.3	0.6	188	27	9.2	8.3	279	28	7.5	6.5	280	24	8.8	8.3	274	19	6.9	2.4	108	28	6.0	3.4	115				
2.1 ,, . . .	21	6.5	0.4	179	22	9.1	8.5	281	27	8.7	7.5	282	18	7.7	6.8	276	15	6.9	1.9	065	23	6.4	3.8	111				
3.0 ,, . . .	10	3.5	0.5	203	12	8.1	6.5	278	17	6.6	5.4	273	12	6.5	5.2	282	11	6.7	2.4	080	21	6.7	4.1	111				
3.6 ,, . . .	1	2.0	2.0	155	6	7.2	5.5	306	13	6.9	5.8	270	3	5.8	4.9	300	7	5.7	4.3	077	19	6.2	3.3	106				
4.5 ,, . . .	1	5.5	5.5	095	3	3.2	2.0	047	8	7.3	4.6	255					3	2.0	1.5	039	14	5.7	4.7	100				
5.4 ,, . . .					2	3.5	2.6	114	5	6.4	0.7	304					3	3.5	2.3	029	11	5.2	4.6	097				
6.0 ,, . . .					2	4.7	4.5	093	4	6.3	3.0	073					2	2.5	2.4	112	9	5.3	4.9	099				
7.2 ,, . . .																					5	5.4	5.1	100				
9.0 ,, . . .																					2	7.0	6.9	080				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER								JAMSHEDPUR							
	1730				2330				0530				1730				2330				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.8	1.5	232	31	1.7	1.5	219	31	1.5	1.1	276	31	2.4	1.3	249	31	1.3	0.8	255	31	0.6	0.1	192
0.15 a.g.	27	5.9	5.3	240	23	6.5	6.2	226	31	7.7	6.0	274	28	5.9	3.8	263	29	7.5	5.7	252	28	4.0	2.5	230
0.3 a.m.s.l.																					28	4.3	2.9	234
0.6 „	27	4.1	3.6	240	23	4.3	3.9	216	31	8.5	7.0	273	28	6.0	4.0	272	29	8.0	5.4	256	28	6.7	5.0	248
0.9 „	27	7.3	6.9	246	23	8.2	7.7	241	30	10.4	8.2	280	28	5.9	3.8	284	29	8.5	5.7	254	24	7.3	5.7	259
1.5 „	21	8.7	8.1	267	17	10.5	9.8	270	25	8.3	6.0	293	27	6.3	3.8	285	30	7.5	4.0	267	18	7.5	4.4	278
2.1 „	13	9.4	8.6	284	14	9.6	9.2	282	18	6.2	3.9	344	24	7.2	4.0	294	27	6.0	2.5	338	11	5.8	2.4	298
3.0 „	6	9.3	7.9	285	7	7.5	6.9	283	5	8.1	7.1	036	13	6.5	4.7	308	22	5.5	4.2	013	9	3.3	1.3	009
3.6 „	4	6.9	6.0	303	3	5.5	4.7	286	1	14.0	14.0	045	12	7.3	5.7	310	8	4.8	4.0	021	5	3.1	0.7	093
4.5 „	3	7.3	5.6	331	1	5.0	5.0	235					7	7.3	5.8	324					2	3.7	2.5	115
5.4 „	2	5.7	4.9	303									3	13.3	12.0	322								
6.0 „	2	6.5	5.7	328																				
7.2 „																								
9.0 „																								

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR											
	1730				0530				1730				2330				0530*				1130			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.3	0.8	240	31	1.5	1.1	205	31	2.5	2.0	233	31	2.1	1.5	215	30	4.9	4.4	243	31	5.1	4.7	235
0.15 a.g.	25	4.7	1.7	220	21	4.4	3.4	215	30	4.7	3.6	240	27	7.4	4.6	227	29	7.3	7.0	243	30	8.1	4.1	234
0.3 a.m.s.l.	25	4.7	1.8	221	21	3.5	2.7	206	30	4.4	3.3	235	27	4.8	3.5	220	29	6.9	6.7	240	30	6.9	6.3	237
0.6 „	25	5.1	2.4	230	21	6.5	5.7	255	30	5.4	4.5	253	27	7.3	6.4	247	29	8.8	8.6	240	30	7.6	7.3	237
0.9 „	22	6.1	3.0	237	18	8.6	7.6	261	30	6.4	5.2	259	27	7.7	6.7	256	29	9.6	9.2	239	28	8.0	7.3	238
1.5 „	16	6.6	3.8	267	14	7.3	6.7	289	21	6.3	3.9	286	23	8.0	6.7	271	29	8.0	6.2	234	23	5.7	3.8	245
2.1 „	8	6.6	3.0	277	12	6.2	5.6	305	16	7.9	4.8	294	16	6.7	5.9	286	29	5.6	2.0	239	21	4.6	0.7	311
3.0 „	3	9.5	8.5	323	9	5.6	4.4	312	13	6.6	4.4	302	8	4.7	3.5	323	28	6.0	2.6	031	19	5.7	3.1	058
3.6 „					3	2.8	2.5	012	9	5.9	4.8	305	2	3.5	3.5	067	27	6.3	4.4	034	17	5.8	2.4	063
4.5 „					2	1.7	0.3	053	6	6.1	3.3	342					26	6.1	3.8	026	12	5.0	3.1	047
5.4 „									2	4.7	3.1	051					26	5.5	2.9	040	7	3.3	2.3	036
6.0 „									2	4.5	3.0	051					26	5.2	2.1	020	5	4.2	0.8	075
7.2 „																	25	6.1	2.8	048	4	6.3	3.9	099
9.0 „																	18	8.2	4.4	079	2	8.3	3.5	161

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MADRAS/MINAM- BAKKAM							
	1730*				2330				0530				1730				2330				0530*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	4.9	4.6	235	31	5.2	4.8	218	31	2.5	0.9	107	31	3.5	1.6	099	31	2.6	1.5	107	31	4.2	3.9	251				
0.15 a. g.	31	5.6	4.7	233	29	10.0	9.4	218	27	5.8	2.2	132	29	3.4	2.4	093	30	6.7	4.0	117	31	6.6	6.3	257				
0.3 a. m. s. l.	30	5.2	4.4	234	30	8.9	8.4	217	27	6.1	2.1	138	29	4.3	2.6	098	30	6.9	4.5	120	31	8.1	7.8	263				
0.6 ,, .	29	5.8	5.0	231	29	10.9	10.1	223	26	7.3	2.7	123	28	5.0	2.3	096	30	7.8	4.7	124	31	10.0	9.6	270				
0.9 ,, .	29	5.9	5.5	233	29	10.3	9.3	232	23	7.0	1.2	227	27	5.5	1.6	085	29	7.0	4.0	135	31	11.1	10.3	277				
1.5 ,, .	29	6.6	5.6	236	23	7.5	5.8	249	16	7.1	2.7	072	22	5.9	1.6	017	25	5.4	1.1	144	31	11.2	10.7	278				
2.1 ,, .	29	5.0	3.5	246	15	6.1	3.7	244	12	6.1	1.4	030	17	6.5	2.6	351	15	5.9	3.3	289	31	9.9	9.4	279				
3.0 ,, .	29	4.7	2.5	349	12	4.2	3.4	040	7	5.9	3.8	052	15	5.8	1.7	360	8	6.4	4.7	318	31	9.0	8.0	274				
3.6 ,, .	29	5.6	3.8	002	7	5.0	2.7	063	3	5.5	5.5	085	9	5.5	2.3	065	1	11.0	11.0	310	30	9.3	8.7	270				
4.5 ,, .	30	6.7	3.7	350	5	7.2	5.4	042	1	2.5	2.5	090	6	5.6	1.6	040					30	8.7	8.1	273				
5.4 ,, .	30	6.2	2.3	350	3	7.5	4.0	036					6	5.5	2.3	360					30	7.5	5.7	277				
6.0 ,, .	28	6.2	1.8	345	3	4.0	1.6	053					2	5.5	1.5	107					30	6.4	4.6	276				
7.2 ,, .	27	5.8	1.0	070																	30	4.3	0.8	285				
9.0 ,, .	22	4.8	3.7	077																	29	6.8	4.7	095				

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE															
	1130				1730*				2330				0530				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	4.2	3.7	263	31	6.2	4.9	185	31	4.2	3.1	198	31	2.4	1.0	128	31	3.2	2.4	276	31	2.5	1.3	238				
0.15 a. g.	31	7.1	6.4	265	31	6.5	4.4	179	31	8.1	6.5	210	25	5.7	3.9	250	28	6.7	5.8	272	28	5.9	4.3	273				
0.3 a. m. s. l.	31	7.5	6.9	261	31	7.0	4.9	198	31	9.1	7.2	220	25	5.7	4.4	254	28	6.9	6.0	272	28	6.6	5.1	270				
0.6 ,, .	31	7.6	7.1	265	31	6.7	5.6	228	31	9.2	7.8	234	25	7.7	7.0	267	27	8.7	7.8	278	26	8.7	7.8	273				
0.9 ,, .	31	7.9	7.4	269	31	6.7	6.0	246	30	8.3	7.7	246	17	9.9	9.3	273	23	10.0	9.2	285	24	10.5	9.8	279				
1.5 ,, .	31	9.5	8.8	273	31	8.6	8.2	275	30	8.7	8.5	266	11	9.1	8.7	285	16	11.2	10.5	285	16	10.7	10.3	283				
2.1 ,, .	28	9.4	8.7	273	31	10.2	9.8	280	27	10.5	9.8	275	10	9.1	8.6	283	8	7.9	7.2	290	2	8.9	8.6	297				
3.0 ,, .	26	8.6	7.9	268	31	10.7	10.2	279	23	9.8	8.9	287	6	8.0	7.7	299	4	8.5	8.1	275	3	7.8	7.5	298				
3.6 ,, .	23	9.4	8.6	270	31	10.0	9.5	275	11	7.0	6.2	273	1	3.5	3.5	025	2	5.3	5.0	281	2	7.0	7.0	291				
4.5 ,, .	21	8.6	7.9	258	31	8.9	8.4	275	2	9.0	8.5	278					1	6.5	6.5	225	1	4.0	4.0	275				
5.4 ,, .	15	6.3	5.5	267	30	7.9	7.4	269																				
6.0 ,, .	9	4.5	2.4	260	31	6.5	5.8	264																				
7.2 ,, .	7	4.1	1.1	105	31	4.9	2.8	278																				
9.0 ,, .	5	7.3	6.8	078	29	5.2	3.3	096																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	MINICOY												NAGPUR/SONEGAON											
	0530				1730*				2330				0530*				1130				1730*			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	4.6	4.5	278	31	6.4	6.0	274	31	5.2	4.9	277	30	2.0	1.7	247	31	4.3	3.5	274	31	4.0	3.3	277
0.15 a.g.	31	8.2	7.4	270	31	9.3	8.7	274	30	7.2	6.7	275	30	8.1	7.5	263	29	6.7	5.8	275	31	7.3	5.6	271
0.3 a.m.s.l.	31	8.9	8.1	275	31	9.7	9.0	277	30	8.1	7.4	275												
0.6 „	31	10.3	9.4	273	31	10.7	9.8	280	30	9.8	9.0	280	30	9.6	8.6	266	29	6.6	5.9	274	31	7.5	6.3	275
0.9 „	31	11.4	10.5	282	31	11.6	10.6	284	30	11.3	10.4	286	30	11.7	10.5	279	25	6.5	6.0	289	31	8.0	6.6	271
1.5 „	29	11.8	11.3	285	31	12.3	11.4	285	27	10.4	9.7	288	30	9.9	8.4	286	14	6.5	6.0	299	31	8.3	7.1	281
2.1 „	29	11.2	10.5	282	31	11.5	10.8	286	24	9.1	8.7	293	30	8.5	6.3	287	12	6.0	5.0	280	31	7.6	6.7	285
3.0 „	23	9.0	8.2	273	31	9.4	8.7	276	15	7.0	6.6	296	30	7.5	4.9	300	1	11.0	11.0	040	31	7.4	5.1	288
3.6 „	18	8.3	7.5	280	31	8.0	7.3	278	9	5.4	5.1	304	30	6.5	4.3	305					30	6.4	4.5	255
4.5 „	9	7.1	5.6	270	31	7.2	6.0	279	6	3.5	2.8	345	30	5.4	2.4	326					30	6.1	3.6	320
5.4 „	5	6.5	5.9	283	31	6.7	4.7	277	2	3.7	3.7	058	30	4.7	1.1	003					30	5.4	2.8	004
6.0 „	4	6.1	5.4	268	31	6.3	3.9	267	2	5.7	5.7	068	30	4.7	1.7	044					30	4.7	1.7	034
7.2 „	3	4.8	3.5	202	31	5.7	0.2	185					30	5.6	3.3	058					30	5.6	3.3	090
9.0 „	2	13.0	13.0	075	30	10.1	8.5	088					26	8.7	8.0	088					27	9.4	9.3	083

Station	NAGPUR/SONEGAON				NEW DELHI/SAFDARJUNG												POONA							
	2330				0530*				1130				1730*				2330				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	1.9	1.5	247	31	1.7	0.6	152	31	3.2	0.8	307	31	2.7	0.6	128	31	3.4	1.5	139	31	0.9	0.9	270
0.15 a.g.	30	5.5	4.6	255	31	5.7	2.1	155	31	5.1	1.2	252	31	6.5	1.3	100	31	7.3	3.8	157	28	6.3	6.2	255
0.3 a.m.s.l.					31	4.6	1.8	153	31	4.6	0.6	270	31	5.0	0.9	102	31	5.4	3.3	155				
0.6 „	30	6.3	5.6	270	31	6.7	2.2	190	31	4.7	0.8	230	31	6.2	1.2	107	31	7.5	3.9	156	28	3.3	3.2	254
0.9 „	30	7.3	6.7	280	31	7.9	2.9	228	31	5.2	1.1	233	31	5.5	1.2	111	31	7.1	2.3	168	28	8.5	8.4	257
1.5 „	28	7.2	6.3	281	31	8.1	3.9	281	24	5.7	1.5	297	31	5.1	0.2	301	28	4.5	1.1	282	20	12.5	12.2	268
2.1 „	18	6.3	4.2	303	31	6.7	3.3	330	22	6.8	4.6	310	31	5.9	3.0	297	25	6.3	2.2	311	11	9.0	8.7	271
3.0 „	6	4.4	1.9	356	30	7.0	4.5	347	13	7.7	5.0	340	31	7.9	4.8	310	17	6.6	4.2	314	7	4.9	3.6	260
3.6 „	3	2.7	1.2	045	30	7.2	5.0	351	9	6.5	3.0	010	31	7.6	4.4	312	1	6.5	6.5	315	6	4.4	3.7	255
4.5 „	1	3.0	3.0	030	30	8.4	3.3	348	8	7.1	2.9	280	31	6.7	4.4	325					2	4.5	3.1	178
5.4 „					31	5.3	1.4	290	6	5.2	0.7	245	30	5.5	2.5	311					1	3.0	3.0	145
6.0 „					30	5.8	2.0	225	4	5.2	4.5	210	30	5.5	2.1	303					1	3.0	3.0	080
7.2 „					30	6.3	1.3	218	3	7.0	5.9	215	30	6.1	2.3	298					1	3.0	3.0	135
9.0 „					30	6.1	1.5	195	1	1.5	1.5	160	30	7.8	2.4	254								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	SILIGURI/BAGHDOGRA				SRINAGAR				TIRUCHCHIRAPPALLI															
	1730				2330				0530*				1730*				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.9	2.2	063	31	2.7	2.4	049	18	1.1	0.2	104	20	0.6	0.6	147	31	4.9	4.6	270	31	7.2	6.1	271
0.15 a. g.	26	3.9	3.1	065	27	4.8	4.7	077	18	2.5	0.7	333	20	2.2	0.3	140	31	8.2	8.0	272	31	8.9	7.4	269
0.3 a. m. s. l.	26	4.0	3.3	066	27	4.8	4.6	080					31	9.6	9.3	271	31	9.0	7.7	268				
0.6	26	4.0	3.4	082	26	4.9	4.3	088					31	12.1	11.7	271	31	9.0	8.2	267				
0.9	26	4.7	4.1	097	25	5.4	4.6	095					31	12.1	11.4	273	31	9.1	8.7	260				
1.5	20	5.2	4.2	108	22	5.8	4.5	101					31	11.1	10.5	272	31	9.7	9.5	260				
2.1	12	4.3	3.2	116	13	5.8	4.1	107	18	3.1	1.8	334	20	2.5	0.3	180	30	9.8	9.3	270	30	9.8	9.5	262
3.0	10	4.5	2.5	115	7	4.0	2.1	173	18	3.1	1.9	319	20	2.9	0.7	315	28	7.0	6.3	272	23	10.1	9.7	272
3.6	6	4.0	2.2	147	1	3.0	3.0	171	18	3.3	1.2	266	20	3.8	1.1	271	28	6.7	5.9	271	19	8.7	8.1	275
4.5	1	1.0	1.0	335					18	3.5	0.9	130	19	3.8	1.3	262	20	5.9	4.9	270	12	5.7	5.3	285
5.4	1	2.5	2.5	075					18	3.8	1.3	188	19	5.8	2.4	248	14	5.6	4.8	259	9	5.2	4.3	270
6.0									18	6.5	3.0	250	19	6.4	3.8	265	10	4.2	2.5	243	9	4.8	3.7	269
7.2									18	9.8	7.8	255	19	10.3	9.3	266	8	3.1	0.5	234	6	3.0	1.1	268
9.0									16	16.0	14.3	250	18	17.7	16.6	261	2	11.0	10.9	102	3	6.0	4.6	088

Station	TIRUCHCHIRAPPALLI				TRIVANDRUM				UDAIPUR															
	2330				0530*				1130				1730*				2330				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	6.1	5.6	269	31	2.8	2.1	334	31	3.3	2.6	308	31	4.0	3.7	296	31	2.2	1.9	324	31	1.0	0.6	236
0.15 a. g.	28	8.2	7.7	267	31	7.0	6.5	326	31	6.1	5.1	305	31	8.2	8.0	305	29	7.0	6.4	318	30	3.9	3.5	252
0.3 a. m. s. l.	28	9.0	8.6	266	31	8.2	7.5	319	31	6.7	5.8	303	31	8.6	8.4	304	29	8.6	7.8	369				
0.6	28	11.1	10.9	263	31	11.1	10.1	307	31	10.1	9.2	297	31	11.1	10.3	299	29	11.7	10.6	304				
0.9	28	12.1	11.9	263	31	12.1	11.1	303	30	12.1	11.1	295	31	12.8	11.8	300	27	13.2	12.1	303	30	4.9	4.3	263
1.5	28	10.8	10.6	269	31	13.1	12.2	296	20	14.6	13.7	291	31	13.0	12.2	298	24	12.9	12.2	298	28	5.8	4.5	279
2.1	26	9.5	8.9	275	31	13.3	12.4	290	11	14.9	14.0	290	31	11.8	11.0	292	15	11.8	11.4	298	22	4.7	0.9	116
3.0	22	8.5	7.5	271	31	11.1	10.1	284	3	10.8	10.3	308	31	10.8	10.2	284	8	7.5	6.7	298	18	6.6	4.8	053
3.6	12	6.6	5.4	270	31	9.5	8.5	276	1	7.0	7.0	315	31	10.4	9.6	279	4	4.1	3.6	311	13	8.1	6.5	045
4.5	5	5.9	4.7	300	31	8.7	7.7	274	1	6.0	6.0	305	31	7.4	6.5	271	3	2.7	2.0	255	7	4.1	2.2	040
5.4	3	5.2	5.1	298	31	7.6	4.8	257					31	7.0	5.4	275	1	5.0	5.0	285	5	2.9	1.6	100
6.0	1	2.0	2.0	319	31	6.5	3.1	249					31	6.7	3.7	276	1	2.0	2.0	225	5	3.3	1.8	088
7.2					31	5.5	1.3	129					31	5.9	0.8	031					3	5.5	5.2	084
9.0					30	8.7	7.2	090					30	11.0	9.1	087					1	8.5	8.5	095

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	UDAIPUR								VENGURLA												VERAVAL			
	1730				2330				0530				1730				2330				0530			
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.4	1.3	226	31	1.5	1.2	232	31	2.1	1.8	250	31	2.5	2.2	258	31	1.8	1.4	243	31	7.8	7.2	252
0.15 a. g. . .	26	4.9	4.4	245	28	5.5	4.4	240	28	5.6	5.1	262	29	7.4	6.7	260	29	6.2	5.4	258	29	9.6	9.0	260
0.3 a. m. s. l. . .									28	7.1	6.9	263	29	8.5	7.9	267	29	7.6	7.0	261	29	10.9	10.2	262
0.6 „ . . .									24	8.9	8.6	266	29	10.7	10.1	268	29	9.5	9.0	266	28	12.0	11.4	263
0.9 „ . . .	26	5.3	4.6	247	28	6.6	5.6	247	11	7.8	7.6	277	18	12.3	11.8	274	15	8.9	8.7	280	23	11.5	11.0	264
1.5 „ . . .	23	6.5	4.6	256	25	7.4	5.8	261	4	7.1	7.0	282	4	7.9	7.5	296	7	8.5	8.4	283	18	10.4	9.7	259
2.1 „ . . .	18	6.1	2.5	292	21	6.0	1.8	281	2	7.5	6.8	273	3	6.7	6.5	311	3	7.7	7.5	281	8	9.8	7.2	246
3.0 „ . . .	13	5.4	4.1	041	13	5.5	3.6	065					1	6.5	6.5	265	1	5.0	5.0	275	4	8.4	1.4	340
3.6 „ . . .	10	7.8	6.2	041	8	6.3	4.7	044													2	9.5	9.2	047
4.5 „ . . .	7	9.1	6.6	026	3	8.3	6.7	033													1	2.5	2.5	050
5.4 „ . . .	3	11.7	10.5	034																				
6.0 „ . . .	1	4.0	4.0	010																				
7.2 „ . . .	1	9.0	9.0	060																				
9.0 „ . . .																								

Station	VERAVAL								VIJAYWADA/GANNAVARAM												VISHAKHAPATNAM			
	1730				2330				0530				1730				2330				0530*			
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	8.2	7.5	360	31	7.7	7.2	264	31	2.6	2.3	245	31	4.1	2.9	259	31	2.5	1.6	214	31	4.5	4.1	280
0.15 a. g. . .	28	8.4	8.0	255	29	9.1	8.6	251	26	7.3	6.6	248	30	6.0	4.5	255	27	6.5	5.0	219	31	7.5	6.6	285
0.3 a. m. s. l. . .	28	9.2	8.9	258	29	10.1	9.5	254	26	9.3	8.4	258	30	6.3	5.4	264	27	7.1	5.6	229	31	8.3	7.6	273
0.6 „ . . .	26	9.9	9.7	261	29	11.1	10.6	257	26	11.6	11.1	266	30	7.5	6.7	272	27	8.1	7.1	249	31	10.3	9.9	253
0.9 „ . . .	23	10.2	9.9	263	28	10.8	10.3	259	26	12.9	12.5	273	30	8.3	7.7	276	27	9.7	9.1	261	31	11.3	11.0	259
1.5 „ . . .	17	9.1	8.5	259	22	9.4	7.7	258	26	12.1	11.7	280	29	11.5	10.9	277	24	11.4	10.5	268	31	11.7	11.1	270
2.1 „ . . .	11	7.3	5.6	258	17	8.6	5.4	244	25	10.5	9.9	281	27	12.9	12.5	276	22	12.5	11.9	356	31	11.2	10.4	276
3.0 „ . . .	10	6.3	2.9	265	9	4.9	1.7	243	22	9.5	8.8	274	25	12.4	12.1	275	14	11.3	10.7	280	30	10.3	9.4	279
3.6 „ . . .	8	5.3	2.4	273	6	4.2	1.0	145	17	9.5	8.7	273	19	11.8	11.2	273	8	9.9	8.4	290	30	8.5	7.4	287
4.5 „ . . .	8	4.3	0.6	165	3	3.8	3.7	088	11	7.3	5.6	268	12	10.9	9.8	289	4	6.1	4.9	293	29	7.9	5.8	275
5.4 „ . . .	8	3.2	1.2	115	1	4.5	4.5	055	4	8.6	4.3	260	5	5.6	5.4	304	3	6.7	4.7	253	29	6.2	3.5	270
6.0 „ . . .	8	3.7	2.1	055	1	7.5	7.5	030	2	5.0	5.0	240	4	3.0	2.9	316	2	6.7	6.5	234	29	5.0	1.2	290
7.2 „ . . .	7	5.0	4.6	058					2	5.7	5.5	339	2	4.7	3.4	359					29	5.1	0.6	057
9.0 „ . . .	5	9.1	8.9	088									1	10.5	10.5	085					28	7.9	6.8	085

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Station	VISHAKHAPATNAM																							
	1130				1730*				2330															
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	5.4	4.9	241	31	4.4	3.5	265	31	3.3	3.1	232												
0.15 a. g.	30	5.8	5.6	238	31	6.1	5.3	270	30	7.4	6.9	229												
0.3 a. m. s. l.	30	6.2	6.1	241	31	6.8	5.5	266	30	8.4	8.0	238												
0.6 „	29	7.5	6.8	251	31	8.4	7.9	252	28	8.9	8.5	251												
0.9 „	27	9.0	8.7	268	31	9.4	8.8	261	26	9.5	8.6	260												
1.5 „	26	10.4	9.7	281	31	10.2	9.4	274	25	13.3	12.3	265												
2.1 „	23	11.8	10.5	084	31	11.2	10.7	273	22	9.8	9.4	272												
3.0 „	18	10.8	4.3	078	30	9.7	9.5	268	15	8.6	8.3	274												
3.6 „	12	7.1	6.3	275	30	9.7	8.7	272	10	7.6	7.3	283												
4.5 „	7	5.7	5.2	280	30	9.1	7.9	277	3	5.2	5.2	277												
5.4 „	4	7.6	5.9	271	30	8.5	6.3	279	3	5.8	5.5	282												
6.0 „	4	5.9	3.6	290	30	6.8	4.6	274	2	4.0	3.5	248												
7.2 „	2	4.7	4.6	035	30	4.8	1.2	360																
9.0 „	1	7.5	7.5	055	27	7.2	5.0	076																

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D					
	AHMADABAD					BANGALORE					GAUHATI					MADRAS/ MINAMBAKKAM					1730 hr.*			
	0530 hr.*					0530 hr.@					0530 hr.*					0530 hr.*				18.0	4	27.0	26.9	082
10.5	23	10.2	9.1	086	10.5	5	10.7	10.6	099	10.5	21	7.2	5.1	089	10.5	27	12.4	11.4	085	21.0	2	21.3	20.6	096
12.0	19	16.0	15.5	091	12.0	1	7.0	7.0	100	12.0	13	11.1	8.5	074	12.0	25	21.9	21.1	085	24.0	1	14.5	14.5	100
14.1	11	17.7	17.4	091		BHAGALPUR				14.1	1	23.0	23.0	040	14.1	19	30.2	29.4	083					
16.2	6	23.4	22.8	092		0530 hr.					1130 hr.				16.2	11	39.4	38.5	090					
18.0	2	20.5	20.0	075	10.5	1	9.0	9.0	100	10.5	4	9.3	8.7	099	18.0	5	32.3	32.0	084		NEW DELHI/ SAFDARJUNG			
21.0	1	19.5	19.5	075	12.0	1	11.5	11.5	095	12.0	2	11.0	10.3	080		1130 hr.					0530 hr.*			
	1730 hr.*				14.1	1	14.0	14.0	090	14.1	1	24.5	24.5	085	10.5	2	15.7	13.3	096	10.5	29	8.2	2.3	190
10.5	24	11.5	10.4	087		BOMBAY/ SANTACRUZ				16.2	1	26.5	26.5	085	12.0	1	26.0	26.0	085	12.0	29	8.7	3.0	173
12.0	21	14.0	13.1	094		0530 hr.*				18.0	1	20.0	20.0	075	14.1	1	32.5	32.5	090	14.1	29	8.5	3.2	148
14.1	12	24.3	22.8	103	10.5	24	13.5	12.3	102	10.5	16	7.5	6.7	063	16.2	1	40.5	40.5	080	16.2	29	11.3	4.9	115
16.2	8	27.6	26.9	102	12.0	24	18.7	17.7	092	12.0	11	9.8	8.2	072		1730hr.*				18.0	29	11.6	9.5	078
18.0	2	27.0	27.0	077	14.1	21	24.0	23.1	094	14.1	4	18.2	17.9	074	10.5	29	11.2	9.9	084	21.0	22	18.0	17.5	093
	ALLAHABAD/ BAMHRAULI				16.2	19	28.5	27.6	096	16.2	2	27.7	25.0	050	14.1	18	32.7	32.2	090	24.0	8	16.9	16.3	085
	0530hr *				18.0	9	27.5	24.4	097	18.0	2	23.7	21.5	067	16.2	13	36.3	35.7	092		1130 hr.			
10.5	13	10.0	8.3	090	21.0	3	25.7	21.3	104		GWALIOR				18.0	3	33.7	31.8	096	10.5	1	4.5	4.5	135
12.0	6	10.0	8.2	093		1730 hr.*					0530 hr.					MINICOY					1730 hr.*			
14.1	3	18.0	17.1	089	10.5	22	13.7	12.3	100	10.5	1	16.5	16.5	105	10.5	1	18.0	18.0	045	10.5	30	8.3	3.0	202
	1730 hr.*				12.0	22	20.2	19.2	097	14.1	18	28.0	26.9	097		0530 hr.*				12.0	30	8.9	3.0	179
10.5	13	8.7	8.4	084	14.1	18	28.0	26.9	097	16.2	16	32.3	31.3	095	10.5	1	13.0	13.0	130	14.1	28	10.4	6.6	154
12.0	6	10.2	9.6	074	16.2	16	32.3	31.3	095	10.5	1	13.0	13.0	130	10.5	29	17.5	16.6	091	16.2	28	10.2	7.4	117
14.1	2	10.0	8.0	091	18.0	13	31.6	30.3	098		JODHPUR				12.0	28	24.3	23.9	087	18.0	25	14.5	14.4	102
	AMBALA				21.0	6	23.0	22.3	093		0530 hr.*				14.1	27	33.8	33.3	086	21.0	23	16.6	15.9	092
	0530 hr.				24.0	1	32.5	32.5	105	10.5	14	6.8	3.4	101	16.2	19	32.9	32.4	090	24.0	12	18.5	17.4	094
10.5	1	1.0	1.0	095		CALCUTTA/ DUMDUM				10.5	11	9.5	4.9	093	18.0	18	26.2	25.3	087	27.0	1	19.5	19.5	075
12.0	1	6.0	6.0	175		0530 hr.*				12.0	11	9.5	4.9	093	21.1	12	27.8	27.4	094		PORTBLAIR			
14.1	1	3.0	3.0	140	10.5	26	14.1	13.3	094	14.1	5	12.3	8.2	122	24.0	2	32.5	32.5	088		0530 hr.*			
	ASANSOL				12.0	24	18.0	14.9	078	16.2	2	10.0	7.0	027		NAGPUR/ SONEGAON					0530 hr.*			
	0530 hr.				14.1	18	24.4	23.6	080	18.0	1	8.5	8.5	050		0530 hr.*				10.5	15	18.0	17.4	070
10.5	1	5.0	5.0	120	16.2	13	28.8	28.2	085		1130 hr.				10.5	21	14.1	13.6	091	12.0	10	24.9	24.1	063
	BAHRAICH				18.0	7	28.9	28.3	087	10.5	2	10.3	4.7	133	10.5	16	22.3	21.5	083	14.1	5	27.2	27.1	073
	0530 hr.				21.0	4	26.7	26.5	082	12.0	2	13.5	7.5	136	12.0	14	29.3	27.6	086	16.2	3	49.2	49.0	078
10.5	1	9.0	9.0	085	24.0	1	11.0	11.0	080	14.1	1	22.0	22.0	086	14.1	11	39.1	37.6	089	18.0	2	25.5	25.5	10
	1730 hr.				10.5	24	12.0	10.5	095	10.5	15	8.5	3.0	088	18.0	7	29.6	29.3	085		1730 hr.*			
10.5	2	8.5	8.5	105	12.0	22	15.0	13.1	088	12.0	14	11.4	6.9	097		1730 hr.*				10.5	15	14.3	13.7	067
12.0	1	7.5	7.5	110	14.1	15	18.8	17.7	088	14.1	10	14.3	9.0	080	10.5	25	14.8	14.2	091	10.5	9	25.1	24.6	062
14.1	1	7.0	7.0	075	16.2	4	23.7	23.5	085	16.2	5	14.3	4.3	130	12.0	22	22.4	20.4	085	12.0	7	36.6	35.8	078
16.2	1	4.0	4.0	060	18.0	2	21.7	20.2	087	18.0	3	7.8	7.1	081	14.1	21	31.7	30.3	085	14.1	1	43.0	43.0	07
18.0	1	12.0	12.0	080	21.0	1	16.0	16.0	080	21.0	1	16.5	16.5	060	16.2	10	30.7	29.7	076	16.2				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 Km. above mean sea level

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D					
SRINAGAR					VERAVAL									
0530 hr.*					1730 hr.									
10.5	13	18.9	17.2	253	10.5	5	13.4	12.9	096					
12.0	12	21.8	19.1	258	12.0	4	18.6	18.3	097					
14.1	10	19.2	17.5	263	14.1	3	23.0	22.5	089					
16.2	7	16.4	11.9	275	VISHAKHAPATNAM									
18.0	6	8.0	3.7	029										
21.0	4	11.5	10.8	103										
24.0	1	18.5	18.5	100										
1730 hr.*					0530 hr.*									
10.5	17	20.4	19.7	258	10.5	26	13.7	12.7	085					
12.0	14	17.9	17.1	254	12.0	25	22.5	21.8	080					
14.1	9	17.8	16.4	261	14.1	23	30.4	29.9	076					
16.2	6	7.2	5.4	255	16.2	16	34.8	34.2	087					
18.0	3	7.7	3.4	100	18.0	12	30.4	29.9	090					
21.0	1	12.0	12.0	100	21.0	1	28.0	28.0	075					
TIRUCHCHIRAP- PALLI					1730 hr.*									
					1730 hr.									
					10.5	2	15.5	15.3	090	10.5	27	12.8	11.1	086
					12.0	2	27.5	27.5	083	12.0	24	19.5	19.2	083
14.1	1	27.0	27.0	080	14.1	20	29.1	28.5	074					
TRIVANDRUM					16.2	17	35.6	35.0	082					
					18.0	14	30.0	29.1	081					
					21.0	5	30.4	29.4	091					
					24.0	1	25.0	25.0	065					
0530 hr.*														
10.5	28	16.7	15.8	088										
12.0	25	24.5	23.8	085										
14.1	25	33.2	32.5	086										
16.2	20	33.5	32.9	089										
18.0	11	35.8	35.3	094										
21.0	6	30.7	30.1	094										
24.0	1	16.0	16.0	040										
1730 hr.*														
10.5	28	18.1	17.4	092										
12.0	28	24.9	24.5	083										
14.1	27	33.8	33.3	084										
16.2	23	32.0	31.3	087										
18.0	21	25.5	24.8	093										
21.0	13	30.5	30.2	091										
24.0	2	11.5	10.2	352										

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

List of Radiosonde stations in India

Serial No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	Ahmadabad	Fan type	20th July, 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Minicoy	Fan type	12th May, 1963	12	
10	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December, 1943	00 and 12	
12	Port Blair	Fan type	4th December, 1949	00 and 12	
13	Srinagar	Clock type	1st August, 1962	00 and 12	
14	Trivandrum	Fan type	1st July, 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 Hours G. M. T.

July, 1963 (Asadha 10—Sravana 9, 1885 Saka)

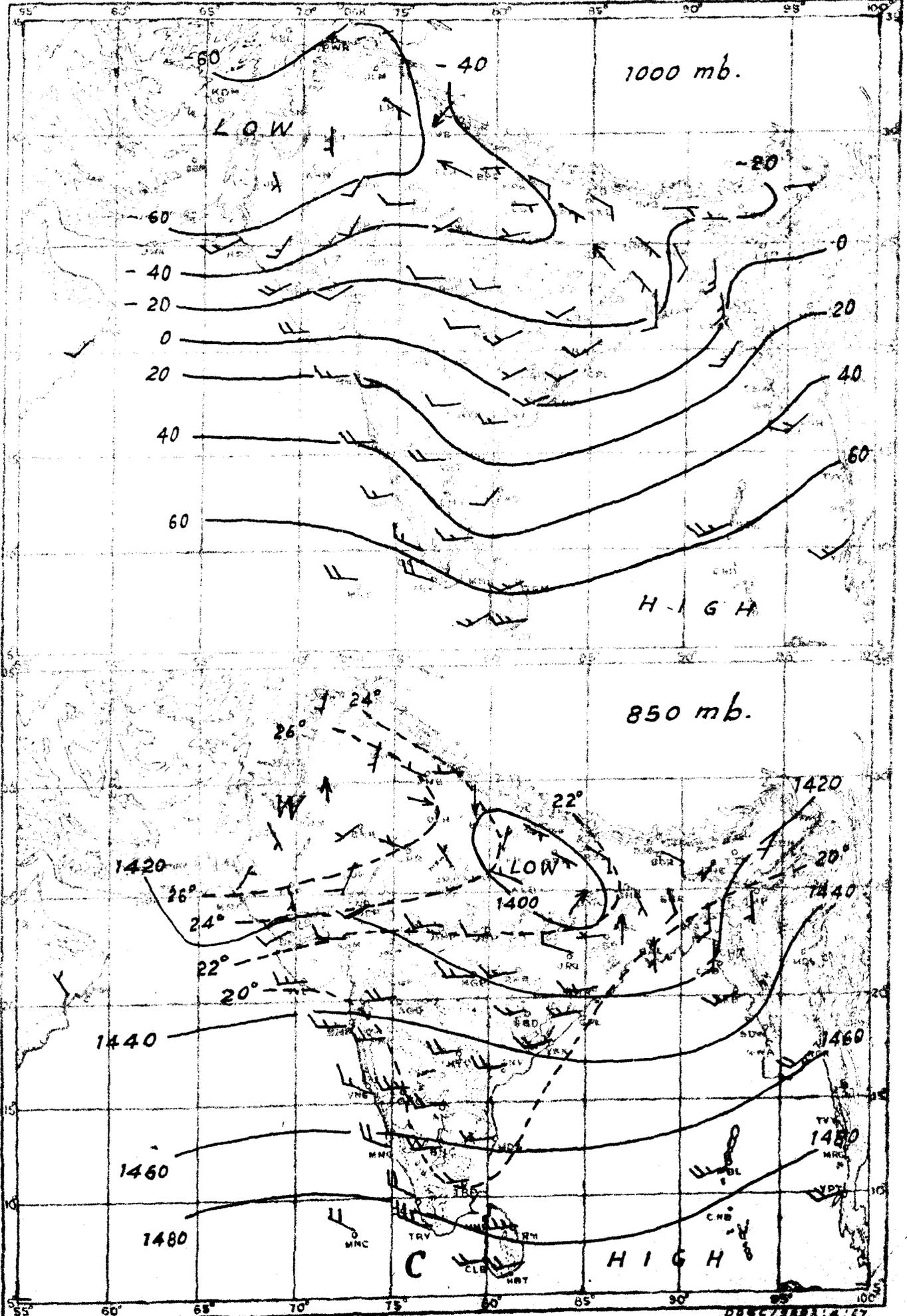
Standard Pressure Surface mbs.	SRINAGAR Surf. Pr. (831 mb.)						TRIVANDRUM (1000 mb.)						VISHAKHAPATNAM (995 mb)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A				No. of obs.	Ht. gpm.	Temperature °A.			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	20	1588	301.2	306	292	281.4	31	064	300.3	303	297	296.6	31	041	301.7	303	299	297.7
1000	20	-073	..	..	..	..	31	063	..	..	..	..	31	-003	..	..	..	..
900	20	880	..	..	..	..	31	988	293.5	296	289	290.1	31	932	297.0	300	294	293.0
850	20	1389	..	..	..	..	31	1483	290.6	293	286	287.1	31	1432	294.1	297	291	290.2
800	20	1927	298.1	304	290	286.1	30	1996	287.7	290	284	283.9	31	1956	291.1	294	288	287.2
700	20	3086	289.7	298	284	276.9	31	3121	282.5	285	277	277.6	31	3104	284.4	289	283	281.4
600	19	4381	280.1	289	275	271.2	31	4387	275.7	278	273	271.6	31	4368	278.2	281	276	274.7
500	19	5852	270.2	276	265	..	31	5844	268.4	271	264	..	31	5841	270.6	277	266	..
400	19	7591	261.1	267	255	..	31	7564	257.3	263	253	..	30	7582	260.7	266	254	..
300	18	9737	248.6	253	245	..	29	9682	242.3	247	236	..	28	9725	247.0	253	241	..
250	17	11045	240.2	245	236	..	28	10938	232.0	240	225	..	26	11019	237.3	245	232	..
200	12	12528	228.5	235	224	..	28	12418	220.3	228	211	..	26	12539	226.6	231	221	..
175	10	13477	223.1	229	216	..	28	13271	213.3	221	205	..	25	13404	220.4	226	212	..
150	9	14480	216.8	222	208	..	28	14223	206.6	215	197	..	25	14400	213.6	220	203	..
125	8	15640	210.6	218	203	..	26	15289	201.3	209	190	..	25	15494	207.0	212	197	..
100	8	17038	208.0	214	203	..	24	16612	199.2	207	191	..	24	16861	201.3	206	195	..
80	6	18392	209.8	217	204	..	23	17927	203.9	213	197	..	19	18195	202.1	208	193	..
70	6	18921	213.0	221	205	..	21	18735	207.1	217	199	..	16	19005	205.0	213	195	..
60	..	..	..	..	..	..	19	19646	209.5	217	199	..	12	19883	208.0	219	200	..
50	..	..	..	..	..	..	17	20754	212.8	224	201	..	9	20959	211.1	224	201	..
40	..	..	..	..	..	..	10	22166	215.5	227	210	..	6	22367	217.0	226	212	..
30																		
20																		
10																		

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I.Met.D.

JULY 1963

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

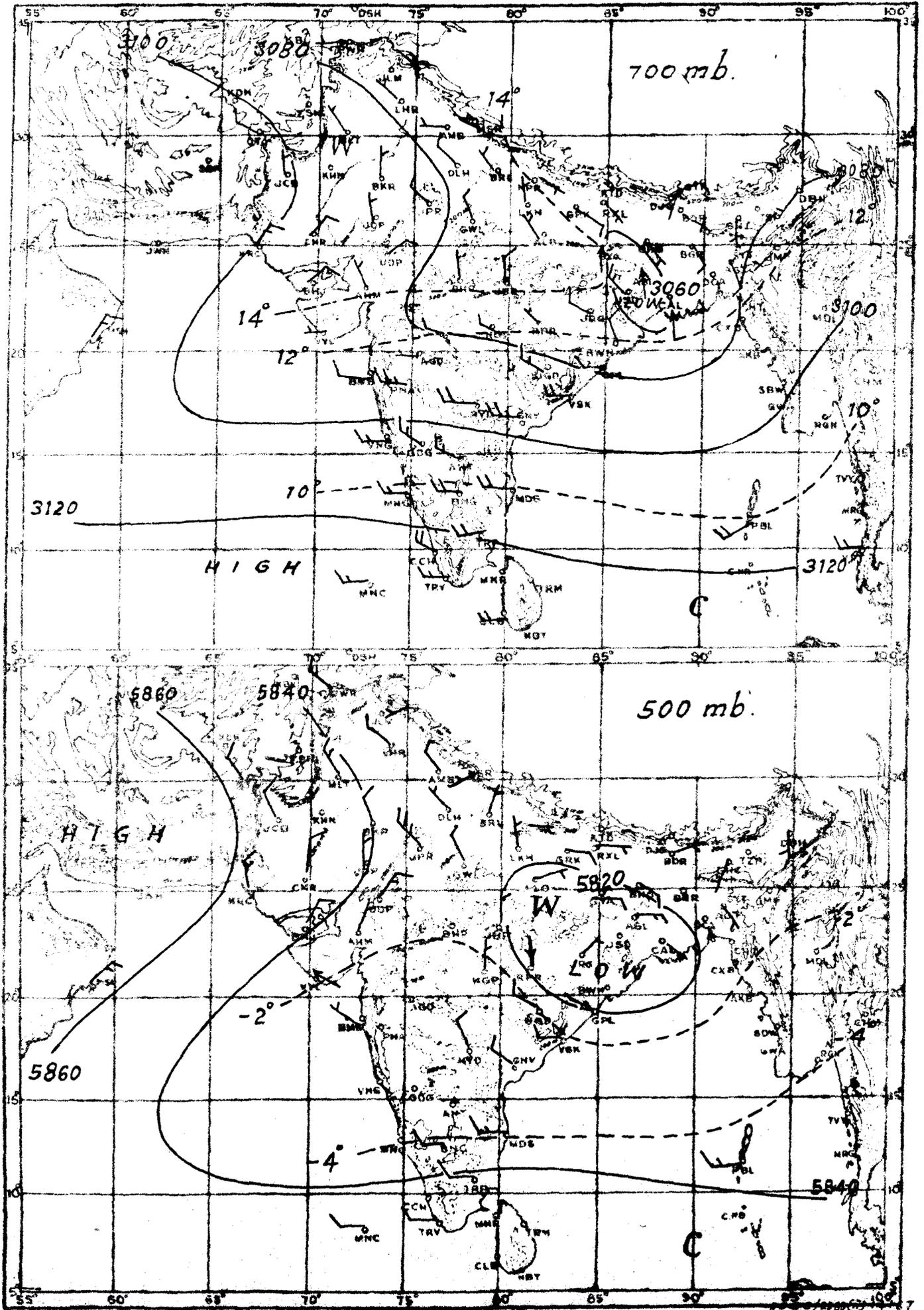
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

JULY 1963

I. Met. D.

Plate II



RESULTANT WIND — S Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ——— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

AUGUST

Published by authority of the Government of India

Chief features—

- i) Sustained monsoon activity over the country in general in association with the movement of a series of low pressure systems from the head Bay of Bengal;
- ii) Development and movement of a Bay depression during the second week; and
- iii) Spells of heavy rains leading to floods in many States in north and central India.

Last month's low pressure area over the extreme north Madhya Pradesh and adjoining Uttar Pradesh weakened and merged into the seasonal trough by 3rd. Under its influence, heavy rains occurred at a number of places, particularly in Uttar Pradesh, East Rajasthan and Gujarat State. Jhansi recorded 11 cm of rain on 1st, Mount Abu and Gondia 13 cm each, Darbhanga 10 cm on 3rd and Meerut and Dehra Dun 10 cm each on 4th. Long Island also recorded a very heavy fall of 28 cm of rain and Mayabandar 12 cm on 4th.

Under the influence of trough of low pressure over the northwest and adjoining Bay of Bengal, a low pressure area formed over the west central Bay off the Circars coast on the 4th. Moving inland on the 5th, it became diffuse and merged into the seasonal trough by 7th. In association with it, heavy rains continued to occur in most parts of north India. The monsoon was also active in the Konkan and coastal Mysore. Some of the noteworthy amounts of rainfall recorded were : Daltonganj 20 cm on 4th, Jalpaiguri 12 cm on 5th and 21 cm on 7th, Bareilly 10 cm on 5th and 11 cm on 6th, Roorkee 21 cm, Kalimpong 16 cm, Kheri Lakhimpur and Bhopal 12 cm each and Mainpuri 11 cm on 8th, Dharamsala 17 cm, Najibabad 15 cm, Hazaribagh 13 cm and Dalhousie and Jamshedpur 11 cm each on 9th. According to press reports, many rivers in Assam, Bihar State, Uttar Pradesh and the Punjab (I) were in spate and the flood waters inundated low lying areas. Half of Nowgong town was submerged by the flood waters of the Kallong river.

A sea level low developed over the head Bay of Bengal on the 8th and concentrated into a depression by the morning of 9th with centre about 100 kms southeast of Sandheads. Moving north-westwards, it crossed coast near Contai during the night of 9th-10th. Continuing its northwestwards movement somewhat slowly, it lay over northwest Rajasthan and adjoining Punjab (I) on 15th morning with centre about 100 kms. northwest of Pilani. Thereafter, it weakened and merged into the seasonal low by 19th. Under its influence the monsoon continued to be active over most parts of north India and along the west coast. It was particularly strong in Orissa, central parts of the country and in Uttar Pradesh. Some of the noteworthy amounts of rainfall recorded were : Chandbali 27 cm and Cuttack 25 cm on 10th, Champa 26 cm, Askote 19 cm and Bombay 14 cm on 11th, Dharamsala 16 cm, Ludhiana 15 cm, Ratlam and Bombay (Santacruz) 13 cm each on 12th, Mahabaleshwar 23 cm on 12th and 29 cm on 13th, Mangalore 15 cm on 13th and Khandala 25 cm on 15th. According to press reports, the major rivers in Orissa, Vidarbha, Uttar Pradesh and the Punjab (I) rose in spate and flooded large areas and caused considerable damage to standing crops. A few deaths also were reported in Uttar Pradesh and the Punjab (I). Due to the continued heavy rains the western embankment of the Kosi eroded at Dalwa and a ring bund was also breached.

The above depression was followed by three feeble low pressure systems from the Bay of Bengal in regular sequence during the second half of the month. Of these, the first developed as a feeble sea level low over the head Bay of Bengal on 14th. Moving westnorthwestwards, it passed inland on 16th and lay over northeast Madhya Pradesh on 17th. Thereafter it shifted northwestwards, weakened and merged into the seasonal trough by 19th. A trough of low pressure which formed over west central Bay of Bengal off Circars coast on 19th moved inland by 26th evening. Later it shifted westwards and became unimportant by 23rd. A feeble sea level low formed over northwest and adjoining west central Bay of Bengal on 25th. It moved rapidly inland by the same evening. Thereafter it moved slowly westnorthwestwards to south Rajasthan and merged with the seasonal low by 31st. In association with these disturbances the monsoon activity continued unabated over most parts of the country. Spells of heavy rain occurred in central parts of the country. Uttar Pradesh, Gujarat State and Rajasthan. A feeble sea level trough of low pressure persisting in the Arabian sea off the Konkan-Kanara coasts also caused heavy rains in

the Konkan and coastal Mysore during the period 22nd to 27th. Ratnagiri recorded 12 cm of rain on 22nd and 13 cm on 24th. Some of the noteworthy amounts of rainfall recorded in the other parts of the country were : Khandala 25 cm and Sagar Island 14 cm on 15th, Balasore 15 cm on 16th, Pusa 25 cm on 17th, Jalpaiguri 16 cm on 18th, Meerut 16 cm each on 20th and 21st, Mandi 16 cm on 20th, Pasighat 26 cm and Nainital 19 cm on 21st, Gonda and Nainital, 17 cm each on 22nd, Cherapunji 35 cm on 26th and 25 cm on 27th, Hardoi 16 cm on 27th and Cooch Behar 21 cm and Jharsuguda 16 cm on 30th. According to press reports the heavy rains led to floods in Vidarbha during the third week and in Assam and Sub-Himalayan West Bengal during the last week. A few places in northwest Rajasthan and in Uttar Pradesh were also inundated by the flood waters from rivers towards the end of the month.

The total rainfall for the month was in moderate defect in Gangetic West Bengal, in slight defect in Bihar Plateau and Jammu and Kashmir, and normal in Assam, Orissa, Bihar Plains, east Madhya Pradesh and the Madras States. It was in slight excess in east Uttar Pradesh, west Rajasthan and Vidarbha and in moderate excess in Sub-Himalayan West Bengal, the Punjab (I), east Rajasthan, west Madhya Pradesh, Saurashtra and Kutch, coastal Andhra Pradesh, south Interior Mysore, Kerala and Arabian Sea Islands. It was in large excess over the rest of the country outside Himachal Pradesh.

The mean maximum temperature was above normal in the Bihar Plateau, and west Rajasthan and below normal in Panjab (I), Madhya Maharashtra, Marathwada, coastal Andhra Pradesh, Rayalaseema and north Interior Mysore. It was normal over the rest of the country outside Himachal Pradesh. The mean minimum temperature was below normal in Jammu and Kashmir and normal over the rest of the country outside Himachal Pradesh.

The mean relative humidity in the morning was above normal in west Uttar Pradesh, the Punjab (I), east Rajasthan, Madhya Maharashtra, Marathwada, Telangana, Rayalaseema and interior Mysore below normal in Jammu and Kashmir. It was normal over the rest of the country outside Himachal Pradesh.

The mean cloud amount in the morning was above normal in the Punjab(I), the Madras State north interior Mysore and the Arabian Sea Islands and normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and Sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I. S. T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I. S. T. of the date given in the succeeding column.

POONA 5;
The 30th October, 1963.

R. ANANTHAKRISHNAN,
for Director General of Observatories.

1	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %		Cloud		1	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %		Cloud	
					0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.						0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.
					6	7	8	9						6	7	8	9
Division									Division—contd.								
1. Assam (Including Manipur, & Tripura).	363.7 +21.5	106	31.0 -0.3	25.1 +0.3	87 +3	82	6.9 +0.4	5.7	8. Rajasthan	205.9 +46.9	129	33.3 +0.4	25.3 +0.3	81 +4	67	5.4 +0.4	5.8
2. West Bengal	335.5 -41.4	89	31.8 +0.3	26.1 +0.4	85 0	81	6.2 -0.1	5.9	9. Madhya Pradesh	376.2 +37.7	111	29.7 +0.4	23.4 +0.1	90 +4	82	7.4 +0.8	7.2
3. Orissa	370.6 +18.4	105	30.9 +0.4	25.2 +0.2	86 +2	84	6.7 0	6.2	10. Gujarat State	220.3 +65.7	142	31.2 +0.2	25.1 +0.2	88 +3	78	6.9 +0.4	6.7
4. Bihar	287.0 -37.9	88	32.1 +0.9	25.5 +0.3	84 +1	81	6.5 +0.3	6.6	11. Maharashtra State	575.4 +269.9	188	28.6 -0.9	22.8 0	39 +5	80	7.2 +0.7	7.2
5. Uttar Pradesh	410.5 +106.0	135	32.1 -0.1	25.4 -0.2	89 +5	79	5.9 +0.3	5.9	12. Andhra Pradesh	239.0 +81.1	151	31.3 -1.0	24.2 -0.4	82 +6	72	6.7 +0.6	6.3
6. Punjab (India) (Including Himachal Pradesh & Delhi).*	300.6 +78.8	136	32.8 -1.1	24.9 -0.4	85 +7	73	5.3 +0.9	5.0	13. Madras State	387.7 +152.9	165	27.5 -0.9	21.2 +0.2	91 +7	81	7.3 +1.1	7.4
7. Jammu and Kashmir	84.6 -22.9	79	26.9 +0.8	14.3 -1.1	60 -15	52	3.5 -0.4	2.8	14. Mysore	442.8 +121.2	138	23.9 +0.3	23.7 +0.1	92 +3	85	6.9 +0.5	7.0
Sub-division									Sub-division—contd.								
1. Bay Islands	684.6 +270.8	165	28.3 -0.3	23.9 +0.2	38 +4	90	7.3 +0.7	7.6	15. Madhya Pradesh (West)	378.1 +91.6	132	29.3 +0.1	23.1 +0.1	91 +	83	7.6 +1.0	7.3
2. Assam (Including Manipur, Tripura).	363.7 +21.5	106	31.0 -0.3	25.1 +0.3	37 +3	82	6.9 +0.4	5.7	16. Madhya Pradesh (East)	373.8 -30.8	92	30.2 +0.7	23.6 +0.2	88 +3	81	7.2 +0.6	7.1
3. Sub-Himalayan West Bengal.	753.2 +200.9	136	30.8 -0.8	25.3 0	38 +3	80	6.9 +1.1	5.3	17. Gujarat Region	338.6 +120.2	155	30.6 -0.2	24.6 0	90 +	79	7.3 +0.5	6.9
4. Gangetic, West Bengal.	183.6 -129.4	59	32.1 +0.6	26.3 +0.5	34 -1	81	6.1 -0.5	6.1	18. Saurashtra and Kutch	154.6 +35.5	130	31.6 +0.5	25.5 +0.3	87 +2	77	6.7 +0.3	6.6
5. Orissa	370.6 +18.4	105	30.9 +0.4	25.2 +0.2	86 +2	84	6.7 0	6.2	19. Konkan	1110.7 +645.3	239	28.4 -0.4	24.1 -0.3	91 +4	88	7.4 +0.5	7.4
6. Bihar Plateau	288.8 -54.7	84	31.8 +1.2	24.9 +0.5	34 +1	81	6.7 +0.3	7.0	20. Madhya Maharashtra	367.6 +138.2	160	28.3 -1.2	21.6 +0.1	88 +6	77	7.0 +1.0	7.1
7. Bihar Plains	285.9 -27.9	91	32.5 +0.6	26.2 +0.1	84 +2	81	6.3 +0.1	6.2	21. Marathwada	433.2 +292.1	307	28.3 -1.8	21.6 -0.3	89 +7	77	7.1 +0.5	7.1
8. Uttar Pradesh (East)	354.0 +52.0	117	32.6 +0.4	25.6 -0.2	88 +4	78	5.9 +0.3	6.0	22. Vidarbha	335.4 +53.7	119	29.3 -0.6	23.3 +0.1	89 +5	79	7.1 +0.7	7.0
9. Uttar Pradesh (West)	495.3 +187.1	161	31.2 -1.0	25.1 -0.1	89 +8	81	5.6 +0.2	5.7	23. Coastal Andhra Pradesh	179.9 +40.6	129	32.1 -1.1	25.2 -0.5	81 +5	73	6.4 +0.3	6.2
10. Punjab (India) (Including Delhi).	300.6 +78.8	136	32.8 -1.1	24.9 -0.4	85 +7	73	5.3 +0.9	5.0	24. Telangana	334.4 +119.9	156	29.9 -0.7	23.1 -0.4	86 +6	75	7.0 +0.9	6.3
11. Himachal Pradesh	404.9 ..	..	30.3 ..	21.2 ..	91 ..	79	3.7 ..	3.3	25. Rayalaseema	218.1 +110.8	203	31.8 -1.5	23.8 -0.4	79 +7	63	6.8 +0.8	6.7
12. Jammu and Kashmir	84.6 -22.9	79	26.9 +0.8	14.3 -1.1	60 -15	52	3.5 -0.4	2.8	26. Madras State	82.8 -3.0	97	33.7 -0.3	25.1 +0.2	71 +3	62	6.0 +1.5	6.4
13. Rajasthan (West)	117.2 +17.5	118	36.2 +1.1	26.7 +0.7	77 +2	53	4.0 -0.2	4.7	27. Coastal Mysore	995.9 +403.0	168	28.3 -0.2	23.2 -0.5	92 +2	88	7.5 +0.6	7.5
14. Rajasthan (East)	294.7 +76.3	135	31.0 -0.2	24.1 -0.1	85 +6	78	6.5 +0.9	6.8	28. Interior Mysore (North)	275.1 +141.8	206	28.1 -1.5	21.3 +0.2	90 +9	79	7.4 +1.8	7.3
									29. Interior Mysore (South)	223.6 +55.3	133	26.7 -0.8	20.4 +0.4	90 +8	79	7.2 +0.6	7.6
									30. Kerala	442.8 +121.2	138	28.9 +0.3	23.7 +0.1	92 +3	85	6.9 +0.5	7.0
									31. Arabian Sea Islands	249.9 +52.1	126	29.7 -0.5	24.9 -0.2	85 +5	83	6.8 +1.6	7.2

Note. The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh not included.

Sub-Division and station	Air temperature in °C								Rainfall in millimetres						No. of rainy days (2.5mm. or more)		Wind speed, kms. per hour			Weather phenomena—No. of days with												
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total month	Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm.)	Precipitation (0.3 mm. or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust-storm	Ground frost	Gale	Squall	Line squall			
																														20(a)	20(b)	21
Rajasthan (West) contd. Barmer Munabao . (R)	35.9	+2.3	40.2	29	26.0	+1.1	23.9	30	33.6	111.6	-22.3	47.6	1	3	-2.8	..	..	..	0	5	0	0	2	0	0	0	0	0	0	0	0	0
Rajasthan (East) Pilani Sikar Alwar Jaipur (Sanganer) Dholpur Ajmer Tonk Bhilwara Kota (Aerodrome) Kota Erinpura (Jawai Dam) Chambal (Rawat Bhatta Dam) Udaipur Jhalawar	33.6	..	37.2	4	25.4	..	23.3	9	88.9	236.8	..	46.6	9	15	..	10.9	9.4	..	0	18	0	0	0	0	0	0	0	0	0	0	0	0
Madhya Pradesh (West) Gwalior Sheopur Shivpuri Nowgong Guna Nimach Rajgarh Sagar Ratlam Bhopal (Bairagarh) Ujjain Narsinghpur Hoshangabad Indore Raipur (Jhabua) Chhindwara Seoni Betul Khandwa	31.9	0	34.5	7	25.5	+0.2	24.0	4	98.5	144.7	+114.3	54.5	17	16	+3.3	9.1	5.9	..	1	23	0	0	21	0	0	0	0	0	0	0	0	0
Madhya Pradesh (East) Satna Sidhi Umari Jabalpur Ambikapur Pendra Mandla Champa Raigarh Raipur Kanker Jagdalpur	31.7	+1.7	34.2	8	24.9	+0.3	23.9	10	276.0	368.9	+33.6	79.2	10	18	+2.9	5.9	4.8	-2.1	1	20	0	0	11	0	0	0	0	0	0	0	0	0
Gujarat Region Deesa Radhaapur Idar Ahmedabad Dohad Vallabh Vidyanagar Porbandra Aerodrome Porbandra	32.2	..	35.2	27	24.9	..	..	..	81.1	194.2	..	39.4	2	10	..	9.5	9.0	..	0	14	0	0	0	0	0	0	0	0	0	0	0	0
	33.5	..	36.8	28	..	..	..	..	40.3	115.1	..	40.0	29	6	..	8.8	8.4	..	0	7	0	0	0	0	0	0	0	0	0	0	0	
	30.1	..	32.8	24,26	24.1	..	21.7	27	151.2	327.6	..	52.0	7	17	..	9.3	6.3	..	0	23	0	0	3	0	0	0	0	0	0	0	0	0
	31.6	-0.5	35.0	26,28	24.8	+0.4	23.0	28	80.0	346.0	+141.5	94.7	5	16	+5.0	5.7	5.5	-2.9	1	20	0	0	7	0	0	0	0	0	0	0	0	0
	28.8	-0.3	31.4	24	22.3	-1.0	21.0	13,28	21.4	183.0	-22.6	47.7	8	12	-0.2	23.4	21.3	-0.8	2	23	0	0	5	0	0	0	0	0	0	0	0	0
	31.4	..	33.6	24	25.1	..	23.9	10	72.7	288.8	..	55.2	14	14	..	9.4	7.9	..	0	20	0	0	0	0	0	0	0	0	0	0	0	0
	30.5	..	32.8	20	24.8	..	23.0	13	76.0	367.1	..	71.4	14	19	..	10.3	8.7	..	0	19	0	0	3	0	0	0	0	0	0	0	0	0
	30.9	-0.7	33.9	22,24	25.1	+0.2	23.3	28	85.8	410.7	+146.8	79.2	14	18	+6.3	5.1	3.0	-4.0	0	21	0	0	0	0	0	0	0	0	0	0	0	0

(R) Register not received. (d) Mean of 27 days.

TABLE II--SUMMARY OF OBSERVATIONS OF TEMPERATURE, RAINFALL AND WEATHER--AUGUST, 1963 (SRAVANA 10,--BHADRA 9, 1885 SAKA) 429

Sub-Division and station	Air temperature in °C								Rainfall in millimetres					No. of rainy days (2.5 mm. or more)		Wind speed km. per hour			Weather phenomena--No. of days with											
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Lite	Total in the month	Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm.)	Precipitation (> 3 mm. or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust-storm	Ground frost	Gale	Squall	Line squall	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20(a)	20(b)	21	22	23	24	25	26	27	28	29	
Hydrometeorological Observatories--(Contd.)																														
Damodar Catchment--contd.																														
Konar	..	..	..	..	..	..	..	..	172.5	226.7	..	28.0	11	16	..	..	..	..	0	20	0	0	0	0	0	0	0	0	0
Bokaro	30.8	..	34.5	12	25.0	..	23.8	17,28	81.6	172.9	..	27.0	11	12	..	5.3	5.2	..	0	14	0	0	5	0	0	0	0	0	0	
Maitlon	32.8	..	36.4	31	24.0	..	22.7	8	98.5	177.2	..	50.2	25	10	..	9.8	9.7	..	1	17	0	0	17	0	0	0	0	0	0	
Ramgarh	31.6	..	34.2	8	25.2	..	24.3	11	16.9	325.2	..	106.3	4	17	..	3.3	2.1	..	0	24	0	0	1	1	0	0	0	0	0	
Panchet Hills	32.3	..	34.5	15	26.0	..	24.2	3	63.6	310.8	..	118.0	25	11	..	7.3	5.9	..	1	16	0	0	12	0	0	0	0	0	0	
Durgapur	32.6	..	37.0	24	23.9	..	22.8	27	47.9	92.6	..	17.0	25	11	..	13.8	10.3	..	0	18	0	0	0	0	0	0	0	0	0	
Mahanadi Catchment																														
Ginabihar	30.7	..	32.4	26	23.5	..	22.1	12,27	..	485.4	..	82.2	17	22	..	..	..	..	0	26	0	0	1	0	0	0	0	0	0
Hirakud	31.6	..	34.9	26	25.6	..	24.3	4,11	114.7	146.6	..	95.0	11	18	..	5.4	4.8	..	0	24	0	0	12	0	0	0	0	0	0	
Bhimkund	30.7	..	33.6	24	24.1	..	21.8	9	199.7	318.1	..	85.0	9	16	..	4.6	2.7	..	0	24	0	0	23	0	0	0	0	0	0	
Sonepur	31.2	..	33.3	22	25.2	..	22.7	11	..	325.7	..	64.4	10	14	..	3.1	..	..	0	19	..	..	..	..	..	..	..	..	..
Khijrawan	30.0	..	31.6	4 days	23.5	..	22.0	10,11,12	0	410.0	..	70.8	9	18	..	8.8	7.0	..	0	19	0	0	14	0	0	0	0	0	0	
Narbada Catchment																														
Bagra Tawa	29.0	..	33.1	7	23.9	..	22.3	13	178.9	433.1	..	119.6	12	18	..	9.1	7.3	..	0	22	0	0	1	0	0	0	0	0	0	
Parasa	28.8	..	31.4	22,24	23.7	..	22.2	13	86.8	313.4	..	61.4	27	18	..	9.4	7.4	..	1	21	0	0	0	0	0	0	0	0	0	0
Thikeri	30.4	..	32.7	24	23.4	..	20.4	13	..	215.0	..	7.0	8	15	..	..	..	..	6	21	0	0	0	0	0	0	0	0	0
Sabarmati Catchment																														
Dandi	31.8	..	33.4	29	25.2	..	23.8	10	71.2	160.8	..	37.0	10	13	..	..	..	..	0	14	..	..	..	..	..	..	..	..	..
Gandak Catchment																														
Jumoson	24.6	..	26.3	10	13.8	..	12.5	6	0	63.3	..	15.2	27	7	..	..	..	..	0	10	..	..	..	..	..	..	..	..	..
Khudi Bazar	..	..	..	..	..	..	..	..	112.4	819.0	..	100.6	11	28	..	..	..	..	0	30	..	..	..	..	..	..	..	..	..
Tinure	25.5	..	27.8	16	17.3	..	16.2	24	16.3	250.0	..	36.8	4	20	..	..	..	..	0	20	..	..	..	..	..	..	..	..	..
Pokhara	29.0	..	31.0	5	21.9	..	20.9	8,11	118.7	1000.1	..	124.6	8	25	..	3.3	2.1	..	0	29	0	0	9	0	0	0	0	0	0	
Gorkha	27.1	..	29.8	10	20.4	..	19.3	11	28.8	581.1	..	103.4	21	23	..	..	..	..	0	25	0	0	6	24	0	0	0	0	0
Nuwakot	30.7	..	31.8	3,11	21.1	..	20.2	11,17,26	122.0	157.0	..	74.0	10	23	..	..	..	..	0	24	..	..	..	..	..	..	..	..
Ghaghara Catchment (Trans-Himalayan Region)																														
Dailekh	25.5	..	26.9	16	19.5	..	18.1	22	210.3	641.9	..	58.0	8	25	..	..	..	..	0	26	..	..	..	..	..	..	..	..	..
Ghaghara Catchment																														
Dadeldhura	23.3	..	26.1	10	16.4	..	13.6	22	139.7	146.1	..	100.0	21	22	..	4.7	4.4	..	0	27	0	0	1	16	0	0	0	0	0	
Sallyana	26.1	..	29.6	2	18.7	..	18.0	6 days	93.5	321.9	..	73.2	3	16	..	..	..	..	0	24	..	..	..	..	..	..	..	..	..
Burwal	34.1	..	44.9	2	25.3	..	24.2	5,19,22	145.4	474.2	..	68.8	19	18	..	..	..	..	0	23	..	..	..	..	..	..	..	..	..
Nagmati Catchment Katmandu*																														
Kosi Catchment	26.7	..	28.7	27	18.2	..	17.1	7	127.3	459.2	..	48.9	20	24	..	..	..	..	0	27	..	..	..	..	..	..	..	..	..
Chepura	..	..	..	..	..	..	..	..	76.2	584.4	..	53.8	12	30	..	..	..	..	0	30	..	..	..	..	..	..	..	..	..
Walungchung Gola	16.9	..	18.7	10	10.2	..	8.6	1	112.8	363.8	..	30.4	12	29	..	..	..	..	0	31	..	..	..	..	..	..	..	..	..
Taplethok	27.0	..	30.1	18	18.4	..	17.8	19,20,25	77.6	611.0	..	54.4	15	29	..	..	..	..	0	31	..	..	..	..	..	..	..	..	..
Bhojpur	24.5	..	27.0	27	18.3	..	17.3	25	63.0	253.2	..	48.0	24	15	..	..	..	..	0	18	..	..	..	..	..	..	..	..	..
Taplejung	24.7	..	27.3	18	17.7	..	16.8	21,22	50.1	445.1	..	61.2	24	23	..	..	..	..	1	28	0	0	0	30	0	0	0	0	0
Okhaldhunga	23.1	..	25.6	10	16.9	..	15.6	25	203.7	606.0	..	129.8	20	24	..	1.5	1.5	..	0	25	0	0	2	19	0	0	0	0	0	
Chainpur	23.7	..	27.5	19	19.9	..	18.5	31	35.0	153.0	..	26.0	19	13	..	..	..	..	0	19	..	..	..	..	..	..	..	..	..
Angbungf	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barahshetra	31.2	..	33.9	5	23.5	..	22.6	25	424.2	572.1	..	108.7	26	20	..	5.5	2.8	..	0	29	0	0	10	0	0	0	0	0	0	
Tista Catchment																														
Gangtok	23.1	..	26.7	9	16.8	..	15.7	21	132.1	710.1	..	55.2	11	30	..	1.5	0.5	..	0	31	0	0	1	29	0	0	0	0	0	
Gezing	24.9	..	28.1	16	18.3	..	16.6	21	85.2	552.7	..	106.7	7	24	..	..	..	..	0	26	..	..	..	..	..	..	..	..	..

(a) Mean of 30 days.

*Data included under Nepal.

(c) †Data not available.

August 1963
MONTHLY MEANS OF UPPER WINDS

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 39 stations all the observations, were taken by means of pilot balloons and at 15 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk(*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n = represents the number of observations;

V = represents the mean wind speed in metres per second; irrespective of direction;

v = represents the resultant mean velocity in metres per second;

D = represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a.m.s.l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No. Station	Lat. N.	Long. E.	Height of anemometer head a.m.s.l. in metres		Date of opening	Approximate times of flight (I.S.T.)				
			°	'						
1 Agartala	23	53	91	15	17	28th November 1951	0530	1730	2330	
2 Ahmadabad	23	04	72	38	61	19th May 1928	0530*	1130	1730*	2330
3 Allahabad/Bamhraulī	25	27	81	44	103	28th February 1930	0530*	1130	1730*	2330
4 Ambala	30	23	76	46	279	1st April 1941	0530	1130	1730	2330
5 Anantapur	14	41	77	37	365	12th February 1946	0530		1730	2330
6 Asansol	23	41	86	59	135	29th May 1942	0530		1730	2330
7 Aurangabad/Chikalthan	19	51	75	24	583	7th October 1951	0530		1730	2330
8 Bahraich	27	34	81	36	134	1st October 1961	0530	1130	1730	
9 Bangalore	12	58	77	35	936	19th May 1915	0530@	1130	1730@	2330
10 Bareilly	28	22	79	24	181	12th January 1943	0530		1730	
11 Begampet	17	27	78	28	543	1st September 1929	0530		1730	2330
12 Bhagalpur	25	14	86	57	61	19th May 1950	0530		1730	
13 Bhopal/Bairagarh	23	17	77	21	532	26th February 1943	0530		1730	2330
14 Bhubaneshwar	20	15	85	50	54	5th December 1942	0530		1730	2330
15 Bhuj/Rudramata	23	15	69	48	90	14th September 1937	0530		1730	2330
16 Bikaner	28	00	73	18	229	18th October 1946	0530		1730	2330
17 Bombay/Santa Cruz	19	07	72	51	27	14th May 1933	0530*	1130	1730*	2330
18 Calcutta/Dum Dum	22	39	88	27	13	14th May 1921	0530*	1130	1730*	2330
19 Cochin/Willingdon †	09	56	76	14	13	16th March 1942	0530		1730	2330
20 Dehra Dun	30	19	78	03	692	1st October 1958	0530		1730	
21 Dibrugarh/Mohanbari	27	29	95	01	112	1st June 1948	0530	1130	1730	2330
22 Gadag	15	25	75	38	650	3rd May 1943	0530		1730	2330
23 Gangtok	27	20	88	37	1778	1st June 1963	0530		1730	
24 Gauhati	26	05	91	43	55	12th March 1955	0530*	1130	1730*	2330
25 Gaya	24	45	84	57	119	19th March 1937	0530		1730	2330
26 Gopalpur	19	16	84	53	24	15th February 1946	0530		1730	2330
27 Gorakhpur	26	45	83	22	83	5th January 1943	0530		1730	
28 Gwalior	26	14	78	15	208	7th May 1938	0530	1130	1730	2330
29 Imphal/Tulihal	24	46	93	54	782	8th March 1952	0530	1130	1730	2330
30 Jabalpur	23	10	79	57	402	30th July 1928	0530		1730	2330
31 Jagdalpur	19	05	82	02	562	25th March 1948	0530		1730	2330
32 Jaipur/Sanganer	26	49	75	48	403	6th June 1953	0530		1730	2330
33 Jamshedpur	22	49	86	11	144	23rd July 1942	0530		1730	
34 Jharsuguda	21	55	84	05	240	1st May 1944	0530		1730	2330
35 Jodhpur	26	18	73	01	229	15th October 1934	0530*	1130	1730*	2330
36 Lucknow/Amausi	26	45	80	53	133	20th November 1950	0530		1730	2330
37 Madras/Minambakkam	13	00	80	11	29	8th April 1926	0530*	1130	1730*	2330
38 Mangalore/Bajpe	12	55	74	53	104	25th May 1959	0530		1730	2330
39 Minicoy	08	18	73	00	15	14th April 1941	0530		1730*	2330
40 Nagpur/Sonegaon	21	06	79	03	316	23rd April 1943	0530*	1130	1730*	2330
41 New Delhi/Safdarjung	28	35	77	12	227	20th October 1936	0530*	1130	1730*	2330
42 Poona	18	32	73	51	593	5th January 1925	0530		1730	2330
43 Port Blair	11	40	92	43	95	29th October 1945	0530*	1130	1730*	2330
44 Raipur	21	14	81	39	308	15th July 1944	0530		1730	2330
45 Raxaul	26	59	84	51	83	28th October 1957	0530		1730	
46 Siliguri/Baghdogra	26	38	88	19	140	7th June 1953	0530		1730	2330
47 Srinagar	34	06	74	48	1603	1st August 1962	0530		1730	
48 Tiruchhirappalli	10	46	78	43	96	22nd June 1936	0530		1730	2330
49 Trivandrum	08	29	76	57	73	8th December 1928	0530*	1130	1730*	2330
50 Udaipur	24	35	73	42	587	24th June 1947	0530		1730	2330
51 Vengurla	15	52	73	38	8	22nd November 1941	0530		1730	2330
52 Veraval	20	54	70	22	17	13th October 1941	0530		1730	2330
53 Vijaywada/Gannavaram	16	32	80	48	32	8th April 1942	0530		1730	2330
54 Vishakhapatnam	17	43	83	14	10	24th September 1928	0530*	1130	1730*	2330

* Radio wind ascents.
 @ Radiosonde ascents followed by optical theodolite.
 † Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	AGARTALA												AHMADABAD															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.8	2.6	131	31	2.7	2.2	169	31	2.7	2.3	146	31	2.2	1.9	256	31	3.0	2.7	256	31	2.3	1.7	250				
0.15 a. g. . .	28	6.8	6.4	150	31	5.6	5.1	172	29	6.9	6.9	167	31	6.4	6.0	259	28	5.1	4.5	255	31	5.0	4.2	244				
0.3 a. m. s. l. . .	28	8.9	8.3	169	31	6.4	5.7	177	29	8.1	7.9	175	31	7.2	6.8	264	28	5.4	4.8	258	31	5.4	4.8	245				
0.6 „ . . .	28	9.3	8.5	175	31	7.9	7.6	178	28	8.7	8.4	183	31	8.8	8.3	269	27	6.4	5.8	265	31	6.3	5.8	251				
0.9 „ . . .	28	8.8	8.1	182	29	8.3	8.0	178	28	8.0	7.8	184	31	8.9	8.1	273	23	6.5	6.1	266	31	7.6	7.1	256				
1.5 „ . . .	25	7.3	6.2	181	28	7.7	7.1	176	26	6.0	5.6	191	31	6.6	5.4	256	6	6.5	6.1	261	31	7.6	7.0	271				
2.1 „ . . .	20	6.9	5.2	169	27	7.3	6.3	173	21	5.6	5.0	183	31	6.1	3.1	253	1	1.5	1.5	030	31	7.6	4.7	279				
3.0 „ . . .	16	5.3	3.7	183	22	7.1	5.4	173	20	4.9	3.6	170	30	5.6	1.1	285					31	5.7	2.7	284				
3.6 „ . . .	11	5.1	4.3	183	15	6.5	4.3	167	3	7.8	4.7	156	30	5.4	1.0	356					31	5.0	1.5	310				
4.5 „ . . .	9	5.6	4.6	161	10	6.7	3.6	160	1	10.0	10.0	150	30	6.0	2.3	032					31	5.0	1.2	345				
5.4 „ . . .	4	6.0	5.9	129	6	5.4	1.9	351					30	6.0	3.6	060					31	4.6	1.0	056				
6.0 „ . . .	3	6.2	5.6	102	5	4.4	2.1	075					31	5.7	3.6	060					31	4.6	1.2	095				
7.2 „ . . .	1	17.0	17.0	075									31	6.0	5.1	090					31	6.0	3.4	073				
9.0 „ . . .													28	8.0	7.4	089					29	9.1	8.1	088				

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA											
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	3.4	2.8	223	31	1.2	0.3	056	31	1.1	0.1	097	31	0.7	0.4	079	31	0.6	0.3	109	31	1.1	0.9	119				
0.15 a. g. . .	26	7.6	6.8	224	31	5.0	1.1	130	29	4.0	1.2	100	31	3.4	1.4	094	28	5.1	2.6	103	26	5.2	4.6	120				
0.3 a. m. s. l. . .	26	8.8	7.9	229	31	4.9	1.1	129	29	4.2	1.0	111	31	3.4	1.4	101	28	5.7	3.1	112	26	2.6	2.4	117				
0.6 „ . . .	26	9.7	9.0	241	31	5.1	1.6	161	27	2.7	0.8	108	31	4.4	2.0	107	28	6.1	3.4	120	26	6.3	5.3	141				
0.9 „ . . .	23	8.7	7.9	253	31	4.9	1.9	167	21	5.6	2.1	105	31	5.2	1.0	123	28	5.7	2.8	132	25	6.0	4.4	148				
1.5 „ . . .	17	6.6	5.0	261	31	5.7	1.5	151	14	5.8	3.8	102	30	4.9	2.0	144	26	4.8	2.5	176	23	5.8	3.0	142				
2.1 „ . . .	6	3.7	0.9	283	31	4.9	0.9	108	8	4.7	2.9	125	30	4.9	1.5	145	21	4.8	2.7	164	17	5.1	2.2	092				
3.0 „ . . .	3	3.8	2.7	051	31	5.1	2.3	136	3	5.0	2.8	109	30	4.3	1.5	118	11	3.7	1.3	163	13	3.7	2.1	031				
3.6 „ . . .					29	4.9	2.2	122	2	7.0	4.0	103	30	4.4	1.7	117					9	3.3	1.8	048				
4.5 „ . . .					29	5.3	2.6	110	1	4.5	4.5	195	30	5.0	2.1	105					7	2.7	1.0	142				
5.4 „ . . .					29	5.8	2.8	119	1	4.5	4.5	190	30	5.1	1.9	106					6	3.7	3.3	190				
6.0 „ . . .					29	6.0	2.8	103	1	5.5	5.5	165	30	5.1	1.7	114					6	4.9	3.9	199				
7.2 „ . . .					29	6.5	4.7	106					30	5.3	3.2	100					3	5.7	5.1	204				
9.0 „ . . .					25	8.0	6.8	105					25	8.6	6.7	088					1	7.5	7.5	220				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	AMBALA												ANANTAPUR															
	1130				1730				2330				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.9	1.6	134	31	1.4	0.7	133	31	1.5	1.3	120	31	3.0	2.8	256	31	5.5	5.2	276	31	4.0	3.9	270				
0.15 a.g.	28	5.4	4.0	124	30	4.3	2.1	122	31	6.2	4.9	122	29	7.8	7.6	256	28	10.2	9.5	274	23	9.7	9.6	263				
0.3 a.m.s.l.	28	3.4	2.3	128	30	2.5	0.9	135	31	3.0	2.4	110																
0.6 "	28	5.2	4.1	127	30	4.3	2.3	122	31	6.8	5.3	127	29	9.8	9.7	258	28	10.8	10.4	271	23	10.8	10.7	263				
0.9 "	26	5.7	4.2	128	30	4.7	2.4	125	31	6.4	5.0	131	29	12.5	12.3	269	28	10.9	10.8	270	23	12.7	12.6	268				
1.5 "	21	6.7	4.5	137	29	5.0	1.3	121	31	5.1	3.6	126	25	13.7	13.4	281	25	11.9	11.7	272	23	12.2	11.9	274				
2.1 "	12	6.7	3.6	132	23	5.0	0.7	036	25	4.4	1.7	079	19	11.5	11.4	289	18	12.1	11.8	275	21	9.8	9.7	282				
3.0 "	7	5.1	1.5	136	17	4.6	1.5	013	22	4.0	1.2	049	10	11.1	10.9	281	9	10.6	10.2	285	10	7.7	7.6	278				
3.6 "	4	4.0	3.1	346	15	4.4	2.0	340	6	2.8	0.9	005	5	5.9	5.8	284	5	9.8	9.7	280	5	7.3	7.1	287				
4.5 "	1	6.0	6.0	320	5	5.0	3.7	310					4	5.9	5.4	266	3	7.3	6.7	281	1	1.0	1.0	160				
5.4 "	1	3.0	3.0	290	1	4.5	4.5	325					2	2.5	2.5	144												
6.0 "	1	3.0	3.0	290	1	7.0	7.0	295					2	2.3	2.2	079												
7.2 "													2	6.7	5.7	027												
9.0 "													1	6.0	6.0	030												

Station	ASANSOL												AURANGABAD/CHIKALTHAN															
	0530				1730				2330				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.1	0.7	124	31	1.5	1.2	125	31	1.3	1.0	125	31	3.5	3.4	272	31	5.2	5.0	272	31	4.3	4.3	271				
0.15 a.g.	23	4.6	3.2	154	31	5.4	4.5	131	31	6.0	5.1	140	28	7.9	7.7	271	24	7.6	7.3	276	25	9.2	9.0	273				
0.3 a.m.s.l.	23	4.8	3.3	160	31	5.7	4.7	129	31	6.5	5.6	144																
0.6 "	22	5.8	3.6	180	31	6.9	5.7	133	31	7.9	6.9	154																
0.9 "	20	5.9	3.7	189	30	6.6	5.1	134	30	7.4	6.5	157	28	10.9	10.7	278	24	9.1	8.9	278	25	11.7	11.6	278				
1.5 "	17	5.6	4.1	178	28	5.9	4.2	141	30	5.7	4.7	145	23	14.9	14.6	280	22	11.2	11.0	282	23	14.5	14.2	281				
2.1 "	12	4.6	2.6	154	26	5.5	3.9	143	26	5.2	4.5	143	13	11.5	11.0	288	14	9.8	9.8	280	18	10.6	10.0	285				
3.0 "	10	3.7	2.1	178	22	5.3	3.5	156	23	4.2	3.4	143	4	7.3	6.4	278	3	3.8	3.7	263	8	6.4	5.5	282				
3.6 "	9	3.8	2.7	197	17	5.4	2.5	138	17	3.9	2.8	144					1	7.5	7.5	255	4	4.9	3.9	302				
4.5 "	8	3.6	2.8	172	13	5.3	0.8	111	13	4.4	2.6	143					1	6.0	6.0	265								
5.4 "	5	4.2	3.0	117	8	3.4	1.2	328	8	3.3	1.7	137					1	6.0	6.0	275								
6.0 "	3	3.7	3.4	088	7	2.5	1.2	023	7	3.6	2.0	122					1	2.0	2.0	290								
7.2 "	1	3.0	3.0	325	3	3.1	2.2	105	3	3.7	2.3	149					1	3.5	3.5	265								
9.0 "	1	8.5	8.5	080													1	4.5	4.5	105								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	BAHRAICH												BANGALORE															
	0530				1130				1730				0530@				1130				1730@							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.2	1.0	096	31	1.9	1.8	098	31	1.0	0.8	109	31	3.7	3.7	270	31	4.3	4.1	265	31	4.2	4.1	268				
0.15 a.g. . .	21	6.8	6.5	106	27	6.1	6.0	112	31	5.3	4.2	124	10	6.9	6.8	260	31	7.6	7.5	260	27	7.5	7.1	263				
0.3 a. m. s. l.	21	7.4	7.1	112	27	6.1	6.1	111	31	5.5	4.0	130																
0.6 „ . . .	20	9.0	8.9	120	27	7.0	6.9	113	31	6.5	5.8	120																
0.9 „ . . .	19	8.6	8.5	120	25	7.8	7.7	118	31	7.0	6.5	121																
1.5 „ . . .	18	7.6	7.4	114	12	9.5	9.5	119	28	6.2	5.7	132	9	10.3	9.7	276	29	8.8	8.5	269	27	9.9	9.7	266				
2.1 „ . . .	14	6.3	6.0	117	8	9.6	9.3	121	23	6.2	5.3	128	6	11.7	11.5	287	10	9.5	9.3	285	26	11.0	10.8	272				
3.0 „ . . .	13	5.4	5.0	126	6	7.8	7.0	103	22	6.4	4.3	136	3	9.8	9.7	289					19	10.4	10.2	279				
3.6 „ . . .	6	4.2	2.5	126	5	6.2	4.7	094	17	5.9	3.6	136	2	10.5	10.5	270					11	9.5	9.1	275				
4.5 „ . . .	5	2.5	2.2	084	3	7.5	5.5	095	14	5.4	1.6	109	2	7.3	7.1	256					5	7.6	7.3	278				
5.4 „ . . .	4	2.1	1.9	063	2	1.3	0.8	344	13	5.4	0.1	090	2	8.5	8.4	253					5	7.1	6.6	280				
6.0 „ . . .	4	2.3	1.0	062	2	1.0	1.0	052	11	5.9	0.9	082									4	4.6	4.1	269				
7.2 „ . . .	3	3.0	2.0	097	1	4.0	4.0	080	9	5.3	2.2	099									2	4.7	4.7	068				
9.0 „ . . .	1	2.5	2.5	025					5	4.4	2.9	054									1	6.5	6.5	050				

Station	BANGALORE				BAREILLY								BEGAMPET															
	2330				0530				1730				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	3.7	3.6	264	31	1.6	1.3	090	31	1.2	8.0	094	31	3.8	3.7	271	31	4.5	4.2	276	31	3.3	3.1	264				
0.15 a.g. . .	26	7.8	7.7	257	28	6.4	5.8	097	30	3.9	2.7	096	18	8.5	8.4	273	31	7.3	6.9	278	27	7.7	7.4	267				
0.3 a.m.s.l.					28	5.9	5.4	092	30	3.6	2.4	096																
0.6 „ . . .					25	8.5	8.2	115	29	4.7	3.7	104	18	5.4	5.4	270	31	6.4	6.0	278	27	5.7	5.3	265				
0.9 „ . . .					20	7.7	7.3	119	29	5.2	4.0	108	18	12.4	12.1	290	31	9.0	8.7	279	27	10.6	9.3	276				
1.5 „ . . .	25	11.2	11.0	273	17	7.4	6.6	117	24	6.4	4.8	117	17	13.1	12.8	295	27	11.6	11.2	283	24	12.7	12.4	286				
2.1 „ . . .	22	12.1	11.9	279	15	7.1	6.1	114	23	5.9	4.7	120	14	11.8	11.6	295	22	12.7	12.4	285	21	12.9	12.3	289				
3.0 „ . . .	14	10.3	9.7	283	13	6.3	5.4	115	22	5.5	4.1	121	11	7.8	7.5	293	18	10.7	9.4	286	12	6.5	6.0	305				
3.6 „ . . .	10	8.9	8.5	288	10	4.4	3.4	112	19	5.5	3.8	113	8	5.6	5.0	299	10	8.5	8.0	285	10	4.7	3.9	318				
4.5 „ . . .	2	8.3	8.0	305	6	3.2	1.5	102	12	5.3	2.9	107	2	3.5	2.0	344	3	4.7	4.4	305	4	4.3	3.3	325				
5.1 „ . . .	1	7.0	7.0	295	5	3.6	1.8	183	8	4.0	2.8	127	2	2.0	2.0	010	1	2.0	2.0	100	1	2.0	2.0	325				
6.0 „ . . .					3	3.2	2.0	167	6	4.7	3.5	134	2	2.3	2.3	011	1	4.5	4.5	055								
7.2 „ . . .													2	2.0	1.6	033	1	6.0	6.0	080								
9.0 „ . . .													1	4.0	4.0	155												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR											
	0530				1730				0530				1730				2330				0530											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	1.7	1.5	109	31	2.2	2.0	093	31	3.2	2.9	271	31	3.5	2.8	266	31	3.0	2.7	248	31	2.1	1.4	210								
0.15 a.g.	31	5.2	4.4	125	31	5.4	5.2	096	20	7.9	7.5	281	24	6.2	4.7	266	23	8.1	7.1	258	27	4.5	3.0	228								
0.3 a.m.s. l.	31	6.1	4.9	137	31	5.9	5.5	100													27	5.3	3.7	242								
0.6 "	29	6.5	5.0	157	31	6.3	5.9	116	20	6.4	5.9	273	24	5.3	4.2	261	23	7.1	6.2	251	27	6.4	4.5	253								
0.9 "	29	5.8	4.2	146	30	6.5	5.8	123	15	9.2	8.5	291	24	6.9	5.2	275	23	8.7	7.6	270	26	6.3	4.6	266								
1.5 "	26	5.7	4.3	125	27	5.7	5.0	138	9	6.7	4.9	291	18	7.5	5.8	292	19	7.1	4.9	289	23	5.6	4.5	269								
2.1 "	25	5.5	4.3	124	25	5.5	4.5	133	2	4.0	2.4	297	13	6.8	5.3	297	13	5.7	3.1	286	16	5.0	3.9	269								
3.0 "	20	4.8	2.6	134	20	4.6	3.6	133	1	2.5	2.5	265	7	6.6	5.5	285	5	5.4	1.8	329	9	3.4	1.4	242								
3.6 "	16	4.2	1.9	158	17	4.5	3.2	138	1	1.5	1.5	345	2	4.3	4.3	308	2	8.0	7.1	341	4	4.4	3.0	106								
4.5 "	12	3.8	2.0	129	14	3.5	1.6	127													2	5.0	4.8	146								
5.4 "	12	4.2	2.5	128	11	3.5	2.0	110													2	5.0	4.9	127								
6.0 "	11	4.0	2.0	113	6	4.3	2.8	119													1	7.0	7.0	120								
7.2 "	7	4.8	3.1	078	5	4.0	3.6	084																								
9.0 "	2	3.3	2.2	085	1	6.5	6.5	075																								

Station	BHUBANESHWAR								BHUJ/RUDRAMATA												BIKANER							
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	4.5	3.2	190	31	3.5	2.8	208	31	4.4	4.2	254	31	6.2	5.8	254	31	5.0	4.7	246	31	1.2	0.9	221				
0.15 a.g.	21	6.2	5.2	186	28	6.2	5.4	209	31	6.9	6.6	251	31	8.5	8.2	251	29	8.4	8.3	244	30	6.2	4.5	236				
0.3 a.m.s. l.	21	6.4	5.5	195	28	7.1	6.3	215	31	7.8	7.4	252	31	8.6	8.4	250	29	8.6	8.3	248	30	4.4	2.8	230				
0.6 "	20	5.8	4.6	198	28	7.8	6.5	217	31	9.9	9.4	258	31	8.8	8.6	255	29	10.5	10.1	253	30	7.6	6.0	262				
0.9 "	17	5.6	3.2	209	27	6.6	5.1	219	27	10.0	9.9	259	29	8.4	8.1	256	28	10.0	9.4	253	30	7.4	5.0	267				
1.5 "	13	4.1	1.6	227	26	5.3	3.3	227	20	7.4	6.0	254	25	6.1	5.2	263	28	6.3	4.1	239	29	5.2	2.1	297				
2.1 "	8	3.7	0.4	310	20	5.2	3.0	231	12	4.7	1.3	245	14	5.5	2.4	335	18	4.1	1.3	221	28	5.3	3.0	015				
3.0 "	2	2.5	1.0	149	13	4.4	1.7	228	9	4.5	3.8	015	9	6.9	4.4	044	16	4.1	2.7	015	25	6.5	5.1	035				
3.6 "					3	4.3	2.6	237	4	3.0	2.9	026	8	5.5	3.6	035	11	5.0	4.3	029	20	6.5	5.6	040				
4.5 "					1	2.0	2.0	090	2	4.3	4.1	081	7	4.5	2.7	023	5	4.2	3.5	039	16	6.2	4.5	039				
5.4 "									1	3.0	3.0	070	6	3.8	1.3	112	2	4.7	4.6	036	15	5.0	2.6	036				
6.0 "									1	2.5	2.5	110	6	2.8	1.3	126	2	3.5	3.5	025	12	5.3	2.3	058				
7.2 "													3	4.2	4.0	110					10	6.0	1.3	076				
9.0 "													2	10.7	10.1	101					7	7.6	1.3	065				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Srawana 10,—Bhadra 9, 1965 Saka)

Station	BIKANER								BOMBAY/SANTACRUZ															
	1730				2330*				0530*				1130				1730*				2330			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	2.0	0.5	217	31	1.9	0.6	180	31	3.5	3.0	269	31	4.5	3.8	262	31	4.4	4.2	267	31	3.5	3.1	258
0.15 a.g.	30	6.0	1.4	225	31	7.4	3.1	183	30	7.3	6.9	261	26	6.9	6.1	254	31	6.8	6.4	270	24	7.0	6.6	246
0.3 a.m.s.l.	30	5.3	1.2	210	31	6.1	2.3	177	30	7.5	7.2	262	26	7.5	7.1	261	31	7.5	7.2	270	24	8.2	7.9	251
0.6 "	30	6.0	0.7	260	31	7.9	3.7	195	30	8.1	7.9	264	19	9.6	8.9	266	31	8.4	8.0	273	24	9.7	9.3	260
0.9 "	30	6.2	0.4	296	31	6.7	3.1	213	30	9.1	8.7	268	13	10.5	10.2	268	31	9.4	8.9	271	22	10.4	10.1	267
1.5 "	27	5.4	1.3	289	31	5.2	1.5	268	30	9.5	9.1	264	4	10.4	10.4	252	31	9.5	9.0	271	16	11.0	10.6	267
2.1 "	27	5.2	2.6	352	30	5.3	2.9	348	29	9.7	9.2	266	3	11.8	11.8	250	31	9.7	9.3	269	11	9.5	9.1	258
3.0 "	21	7.2	6.0	022	23	6.9	5.9	026	29	7.5	6.8	270					31	8.7	8.1	270	7	7.4	6.3	250
3.6 "	18	7.9	6.4	023	13	7.6	6.6	027	29	6.1	4.7	281					31	7.8	6.9	276	1	3.5	3.5	310
4.5 "	10	6.0	3.3	359	8	7.2	6.7	026	29	5.3	2.1	318					31	5.8	3.7	280	1	1.0	1.0	030
5.4 "	8	5.5	1.9	001	5	6.0	5.6	024	28	5.2	1.3	338					31	5.8	2.4	285	1	6.5	6.5	085
6.0 "	8	5.7	2.1	022	3	6.0	5.1	028	28	4.9	0.7	036					31	5.0	1.2	299				
7.2 "	5	8.4	2.4	345	1	7.5	7.5	340	28	6.0	3.2	071					30	5.7	1.7	069				
9.0 "	3	7.7	7.0	041					27	8.1	6.7	095					30	7.9	7.0	085				

Station	CALCUTTA/DUM DUM								COCHIN/WILLINGDON†																			
	0530*				1130				1730*				2330				0530				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	1.1	1.0	174	31	2.1	1.7	142	31	2.2	2.0	169	31	1.6	1.5	162	31	0.9	0.6	277	31	2.9	2.7	297				
0.15 a.g.	31	4.9	3.9	174	31	4.5	3.8	150	31	5.8	4.8	177	31	5.8	5.5	170	26	3.0	1.5	315	26	5.3	5.1	294				
0.3 a.m.s.l.	31	5.5	4.3	185	31	5.1	4.3	157	31	6.1	5.6	177	31	7.1	6.5	177	26	4.6	3.9	292	26	6.6	6.4	294				
0.6 "	31	6.1	4.5	193	31	5.7	4.5	159	31	7.3	6.0	179	30	8.3	7.7	183	26	7.9	7.4	293	26	8.8	8.5	298				
0.9 "	31	6.6	4.8	197	24	6.4	4.6	162	31	6.8	6.1	179	29	7.6	7.1	181	25	9.2	9.0	295	25	9.7	9.4	300				
1.5 "	31	5.9	4.1	193	12	5.6	4.1	172	31	6.2	5.2	170	24	6.2	5.6	175	20	10.5	10.3	294	23	9.9	9.7	299				
2.1 "	31	6.0	3.9	178	6	6.3	4.0	170	31	5.8	4.5	169	22	5.1	4.5	171	20	10.9	10.5	292	20	10.3	10.3	297				
3.0 "	31	6.0	4.0	165	3	5.0	4.7	195	31	5.8	3.7	155	13	4.4	3.7	166	9	10.6	10.2	292	13	9.5	9.1	290				
3.6 "	31	5.9	3.7	172	1	6.0	6.0	170	31	5.3	3.5	141	3	2.7	2.7	109	6	8.0	7.8	287	8	8.6	8.5	288				
4.5 "	31	5.7	3.9	156					31	5.8	4.1	145	1	3.0	3.0	100	1	1.5	1.5	260	2	6.0	6.0	273				
5.4 "	30	5.6	3.4	137					31	5.9	3.2	113					1	1.5	1.5	210	1	3.5	3.5	270				
6.0 "	30	5.7	4.0	126					31	5.4	3.5	099					1	6.5	6.5	180	1	3.0	3.0	195				
7.2 "	30	7.1	5.0	118					30	5.9	3.7	085									1	4.0	4.0	230				
9.0 "	29	10.0	9.3	099					29	8.5	8.2	092																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10, —Bhadra 9, 1885 Saka)

Station	COCHIN/ WILLINGDON†				DEHRA DUN								DIBRUGARH/MOHANBARI											
	2330*				0530				1730				0530				1130				1730			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.5	0.4	300	31	0.5	0.4	032	31	0.5	0.1	283	31	0.7	0.3	072	31	0.6	0.2	081	31	0.8	0.4	039
0.15 a. g. . .	22	3.2	2.7	298	21	1.3	0.4	085	20	2.2	0.7	304	22	3.4	1.8	102	22	2.4	0.5	052	31	3.1	1.5	074
0.3 a. m. s. l. . .	22	4.4	4.0	296									22	3.5	1.6	104	22	2.5	0.2	060	31	3.3	1.6	082
0.6 „ . . .	22	7.4	7.1	298									22	4.2	1.1	165	22	2.9	0.3	174	31	2.7	1.2	127
0.9 „ . . .	22	8.9	8.5	298	21	1.3	0.4	165	20	1.9	0.6	290	18	4.4	1.8	197	18	3.7	0.8	219	30	2.9	1.3	196
1.5 „ . . .	19	10.4	10.1	297	17	1.3	0.3	169	19	2.2	0.4	285	13	2.3	1.0	166	16	3.6	1.6	196	26	4.5	3.3	230
2.1 „ . . .	16	10.1	10.1	295	8	2.9	0.7	152	18	2.6	0.5	345	11	3.8	1.7	151	12	3.6	2.2	196	24	5.2	4.5	216
3.0 „ . . .	10	8.6	8.5	293	5	1.9	1.1	342	14	2.5	0.9	357	9	3.1	1.6	215	10	3.8	2.5	174	20	5.0	4.0	213
3.6 „ . . .	3	6.3	6.3	270	2	1.3	1.3	105	11	2.7	1.0	360	5	3.6	2.7	198	7	3.4	2.2	175	18	4.1	3.0	207
4.5 „ . . .					1	3.0	3.0	155	7	2.3	1.3	350	3	4.7	3.6	202	4	2.6	1.5	218	14	3.6	2.6	205
5.1 „ . . .					1	4.0	4.0	180	5	4.1	1.5	237	1	3.0	3.0	170	2	2.0	0.8	284	12	4.0	2.7	222
6.0 „ . . .					1	3.0	3.0	195	3	5.4	3.4	240									11	3.4	1.9	212
7.2 „ . . .									1	6.0	6.0	210									7	3.2	1.3	154
9.0 „ . . .																					3	8.6	8.2	072

Station	DIBRUGARH/ MOHANBARI				GADAG								GANGTOK											
	2330				0530				1730				2330				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.8	0.5	049	31	4.1	3.8	245	31	5.4	5.2	263	31	4.3	4.0	255	31	0.1	0.1	180	31	0.2	0.1	085
0.15 a. g. . .	29	4.0	2.0	063	29	9.8	9.7	251	29	11.9	11.7	262	28	10.1	10.1	255	7	2.1	1.2	004	3	2.7	0.6	023
0.3 a. m. s. l. . .	29	3.5	2.0	076																				
0.6 „ . . .	29	3.1	1.6	100																				
0.9 „ . . .	28	2.7	1.2	170	29	11.3	11.1	265	29	12.2	12.0	264	28	11.6	11.5	266								
1.5 „ . . .	25	3.4	3.0	216	23	14.2	14.0	277	20	13.7	13.5	275	24	14.0	13.7	280								
2.1 „ . . .	20	4.3	3.7	223	18	13.1	12.6	282	18	12.1	11.7	282	22	12.5	12.2	286	7	1.6	1.0	326	3	2.2	0.2	233
3.0 „ . . .	12	5.2	3.5	224	17	11.6	11.1	282	10	10.1	9.6	285	14	10.2	10.0	286	6	1.7	1.1	112	2	3.0	2.7	183
3.6 „ . . .	4	4.6	2.8	189	9	9.1	8.5	294	3	7.5	6.6	309	6	5.1	4.9	283	5	2.3	0.9	102	1	4.5	4.5	125
4.5 „ . . .					6	6.1	5.5	286	1	8.0	8.0	335	2	4.3	3.7	266	4	4.0	1.5	151	1	3.0	3.0	155
5.4 „ . . .					3	1.8	1.6	255	1	5.5	5.5	345	1	2.5	2.5	040	3	3.3	3.3	166	1	3.5	3.5	085
6.0 „ . . .					1	2.0	2.2	070					1	4.5	4.5	030	3	2.3	2.1	156				
7.2 „ . . .					1	2.5	2.5	040													2	2.0	1.8	067
9.0 „ . . .																					2	5.3	2.4	095

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	GWALIOR												IMPHAL/TULIHAL											
	0530				1130				1730				2330				0530				1130			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.9	0.2	231	31	1.7	0.7	313	31	1.5	0.3	192	31	0.6	0.1	216	31	0.6	0.2	023	31	1.1	0.3	157
0.15 a. g. . .	25	4.5	2.1	260	30	3.6	1.0	325	28	3.9	0.3	021	29	3.5	0.7	171	20	2.5	1.2	040	29	1.9	0.6	181
0.3 a. m. s. l. . .	25	3.4	1.5	281	30	3.5	1.1	318	28	3.6	0.3	017	29	2.9	0.6	173								
0.5 " . . .	24	6.1	3.7	280	29	4.4	1.6	323	28	4.3	0.6	352	29	4.5	0.8	172								
0.9 " . . .	20	5.9	4.5	279	27	5.3	2.1	318	28	4.6	0.9	336	29	4.5	1.1	153	20	2.4	1.2	041	29	1.9	0.7	180
1.5 " . . .	17	5.4	3.1	280	13	5.4	1.8	346	20	4.7	1.2	037	28	3.9	0.4	169	19	3.0	0.6	124	29	3.4	0.9	198
2.1 " . . .	14	5.0	1.7	325	8	4.1	2.6	331	18	4.6	0.9	360	23	3.8	0.6	286	12	4.7	1.2	157	17	4.3	1.5	187
3.0 " . . .	10	4.1	1.7	305	1	1.5	1.5	075	15	5.0	0.7	013	19	4.0	0.8	019	5	4.7	2.8	143	6	4.5	2.6	183
3.6 " . . .	7	3.8	1.1	282	1	3.5	3.5	110	12	5.7	1.0	104	10	4.3	0.8	073	2	4.0	2.7	227	1	3.5	3.5	235
4.5 " . . .	5	4.2	2.2	169					8	6.2	2.7	093	1	3.0	3.0	080	1	2.5	2.5	145	1	3.0	3.0	255
5.4 " . . .	3	2.7	0.9	210					5	3.7	0.2	186												
6.0 " . . .	2	3.3	2.3	140					2	2.5	0.2	346												
7.2 " . . .									1	2.0	2.0	305												
9.0 " . . .																								

Station	IMPHAL/TULIHAL								JABALPUR								JAGDALPUR							
	1730				2330				0530				1730				2330				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.3	0.8	189	31	1.1	0.4	301	31	0.9	0.8	248	31	1.5	1.2	258	31	0.9	0.7	242	31	1.0	0.8	234
0.15 a. g. . .	27	3.3	1.1	211	23	2.5	0.6	318	22	5.3	4.6	253	31	5.3	4.4	259	29	4.9	4.1	249	21	4.7	4.4	229
0.3 a. m. s. l. . .																								
0.6 " . . .									20	5.3	4.7	262	31	5.6	4.5	265	29	5.3	4.6	253	21	2.6	2.5	223
0.9 " . . .	27	3.4	1.1	212	23	2.5	0.7	323	17	6.7	5.1	276	29	6.1	4.4	274	28	5.7	4.3	267	21	6.6	6.2	262
1.5 " . . .	26	3.0	1.7	180	22	3.7	1.2	333	9	4.7	3.4	290	25	5.6	3.5	279	24	5.3	3.1	279	14	8.6	7.7	285
2.1 " . . .	19	3.5	1.7	229	17	4.4	1.2	339	7	4.2	2.9	302	17	4.9	2.5	291	19	5.2	2.7	294	10	6.5	6.0	302
3.0 " . . .	9	5.0	2.8	212	6	2.5	1.5	122	6	2.9	1.6	004	9	4.1	1.8	329	15	4.1	0.9	330	4	3.3	2.4	317
3.6 " . . .	8	4.0	2.5	225	4	4.4	1.7	087	5	2.2	1.1	042	7	4.4	1.5	003	9	3.0	1.4	020	4	2.7	1.1	007
4.5 " . . .	1	2.0	2.0	110	2	1.5	1.1	151	4	2.1	0.8	109	3	2.2	2.0	039	5	3.4	1.8	101	2	2.7	2.5	137
5.4 " . . .									3	2.0	0.7	180	3	3.7	3.0	093	3	4.3	3.9	104	2	7.0	6.9	122
6.0 " . . .									2	3.0	1.3	246	3	4.5	3.7	111	1	6.5	6.5	070	2	7.7	7.7	125
7.2 " . . .													1	5.5	5.5	360					1	10.0	10.0	090
9.0 " . . .																								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Srawana 10, —Bhadra 9, 1965 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER												JAMSHEDPUR			
	1730				2330				0530				1730				2330				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.0	1.7	242	31	1.5	1.4	220	31	1.1	0.6	293	31	1.4	0.5	320	31	0.9	0.1	336	31	0.8	0.5	088
0.15a.g.	24	5.2	4.2	241	24	5.7	5.4	232	31	5.5	2.7	285	26	4.4	1.5	293	31	5.2	0.9	237	29	3.0	0.6	172
0.3 a.m.s.l.																					29	3.0	0.9	183
0.6 „	24	3.6	2.9	244	24	4.0	3.8	226	31	6.1	3.2	282	26	5.0	1.2	296	31	5.5	1.0	229	29	4.3	1.9	229
0.9 „	24	6.2	5.5	252	23	6.9	6.3	250	30	7.3	4.0	292	26	5.2	1.4	324	31	5.4	1.3	247	23	5.1	1.9	259
1.5 „	20	5.9	5.2	275	17	7.4	6.6	273	25	6.8	4.1	297	24	5.3	2.9	325	30	5.1	1.7	302	14	4.7	3.3	238
2.1 „	12	5.8	4.4	277	11	5.6	5.2	287	20	5.6	3.3	330	19	5.9	3.0	347	28	5.4	2.4	345	9	4.0	2.7	225
3.0 „	6	4.3	3.2	290	9	3.2	2.9	274	10	4.3	3.6	008	10	6.2	4.8	320	21	6.0	3.7	360	7	2.4	1.2	206
3.6 „	3	2.8	1.4	035	5	2.9	0.8	291	3	4.8	4.1	034	8	6.7	4.6	333	14	5.8	3.3	012	6	2.5	1.8	180
4.5 „	2	2.5	0.5	074	1	2.0	2.0	290					3	7.2	1.9	317	2	6.5	4.5	352	2	3.0	2.9	163
5.4 „	1	5.0	5.0	050									2	8.0	1.5	070					1	3.5	3.5	120
6.0 „	1	5.5	5.5	040																	1	3.0	3.0	115
7.2 „																								
9.0 „																								

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR											
	1730				0530				1730				2330				0530				1130			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.3	1.4	100	31	1.6	1.1	195	31	2.0	1.3	226	31	1.8	1.2	202	30	2.3	2.3	237	31	3.5	3.0	240
0.15 a.g.	29	4.5	3.1	124	20	4.1	3.3	196	29	3.7	2.3	221	28	4.7	3.1	201	29	6.5	5.8	250	29	5.8	5.0	240
0.3 a.m.s.l.	29	4.5	3.1	127	20	3.3	2.7	193	29	3.4	2.2	226	28	3.9	2.7	193	29	4.4	3.5	242	29	4.9	4.2	344
0.6 „	29	4.7	3.3	127	20	4.9	3.6	235	29	4.1	2.4	230	28	5.6	3.7	216	29	6.7	5.8	246	29	5.6	4.7	247
0.9 „	26	4.9	2.9	143	15	5.0	3.6	247	29	4.3	2.3	235	27	5.5	3.5	226	29	7.5	6.2	241	29	5.6	4.3	247
1.5 „	18	4.3	2.7	170	11	3.9	2.3	253	26	4.4	1.2	205	24	4.5	2.4	227	26	5.3	3.7	248	23	5.0	2.0	302
2.1 „	14	4.9	3.2	179	8	4.0	2.2	272	23	4.6	1.0	159	22	3.9	1.5	200	26	5.3	0.8	337	18	6.2	2.4	028
3.0 „	5	4.9	3.4	222	4	2.1	0.2	076	19	3.5	1.2	125	14	2.7	1.2	176	25	6.6	4.5	044	14	6.6	4.3	043
3.6 „	3	4.8	3.1	217	3	3.2	3.1	126	15	3.6	1.9	064	5	3.9	2.0	143	24	6.0	5.7	040	12	5.4	4.7	044
4.5 „	1	3.5	3.5	295	3	4.0	3.9	159	10	3.7	1.6	081					23	6.1	3.5	045	9	4.9	3.4	050
5.4 „					1	9.0	9.0	185	3	4.8	2.0	079					23	6.3	3.1	074	7	4.8	1.8	062
6.0 „									2	5.0	2.9	135					22	6.9	4.6	079	5	4.8	1.5	080
7.2 „									1	3.0	3.0	150					22	7.3	4.6	073	3	7.7	3.9	085
9.0 „																	20	9.1	5.6	080	1	4.5	4.5	155

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Srawana 10,—Bhadra 9, 1885 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MADRAS/MINA-MBAKKAM											
	1730*				2330				0530				1730				2330				0530*											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	3.5	2.6	238	31	2.5	2.2	217	31	2.5	1.8	095	31	3.4	2.5	100	31	2.2	1.4	108	31	3.8	3.5	256								
0.15 a.g.	31	4.3	2.8	239	28	9.1	5.7	240	23	5.5	3.6	099	31	4.3	2.4	098	30	6.1	4.7	101	31	6.4	6.0	260								
0.3 a. m. s. l.	31	4.1	2.5	242	28	7.3	6.3	216	23	5.9	3.9	110	31	4.4	2.9	104	30	6.2	5.3	110	31	7.4	7.1	266								
0.6 "	31	5.0	3.3	227	28	9.1	8.3	229	23	7.8	5.0	120	31	5.7	4.0	110	30	7.1	6.3	118	31	9.3	9.0	280								
0.9 "	31	4.8	3.4	230	28	8.2	7.4	239	22	7.8	4.7	123	30	5.6	3.7	116	30	7.0	5.9	122	31	10.6	10.0	285								
1.5 "	31	4.8	1.9	250	28	5.6	3.8	258	20	6.9	4.1	123	26	5.3	3.1	130	27	6.4	4.4	133	31	11.1	10.8	294								
2.1 "	30	4.3	1.4	024	26	5.2	0.6	044	14	5.1	3.3	124	18	4.7	3.9	128	20	6.0	4.1	145	31	10.8	10.3	289								
3.0 "	30	5.3	3.3	010	23	6.5	4.8	043	8	4.2	1.6	134	12	3.9	2.3	104	13	5.7	3.3	180	31	10.5	10.2	282								
3.6 "	30	6.1	3.4	004	16	5.7	4.7	043	4	4.4	0.8	180	9	4.7	3.0	109	4	3.3	1.2	270	31	10.2	9.9	279								
4.5 "	30	5.4	2.0	008	8	5.1	2.6	356	3	3.7	0.2	026	6	4.0	3.4	116	2	4.7	4.5	270	31	9.7	8.8	274								
5.4 "	30	5.7	1.0	003	2	4.5	3.7	236	1	1.5	1.5	075	4	3.0	1.6	015					31	8.8	8.0	268								
6.0 "	29	5.3	1.1	030	2	4.5	3.5	230	1	1.0	1.0	315	2	3.5	0.5	075					31	8.8	7.1	272								
7.2 "	29	5.5	1.2	047																	31	6.4	3.1	256								
9.0 "	25	6.1	3.8	078																	31	8.0	5.2	096								

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE															
	1130				1730*				2330				0530				1730				2330							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	3.5	3.2	271	31	4.2	2.7	197	31	4.2	3.7	203	31	1.5	0.6	262	31	2.8	2.5	277	31	1.4	0.4	278				
0.15 a.g.	31	5.9	5.6	269	31	5.0	2.9	200	30	8.1	7.7	210	19	5.7	4.8	264	24	6.1	5.9	271	21	5.1	3.8	278				
0.3 a. m. s. l.	31	6.4	6.1	264	31	5.1	3.5	215	30	9.7	8.8	223	19	6.3	5.6	266	24	6.7	6.5	272	21	5.9	5.0	277				
0.6 "	31	7.8	7.5	268	31	5.7	5.0	245	30	10.3	9.5	240	18	8.6	8.2	278	23	8.4	8.2	280	21	8.4	7.9	281				
0.9 "	31	8.8	8.3	276	31	6.4	5.9	255	29	10.6	10.0	252	17	9.5	9.3	283	16	9.8	9.5	285	20	9.9	9.7	283				
1.5 "	31	10.8	10.3	290	31	8.5	8.1	280	27	10.7	10.3	273	7	10.6	10.2	287	7	10.5	10.4	291	11	10.6	10.3	283				
2.1 "	30	9.7	9.2	286	31	10.2	9.9	290	23	10.3	9.9	278	4	10.5	9.7	277	3	9.8	9.7	289	10	10.5	10.1	284				
3.0 "	28	10.6	10.1	281	31	10.2	9.9	285	18	9.3	8.7	278	2	12.7	12.7	275	2	10.3	10.2	279	6	8.4	8.3	275				
3.6 "	26	10.5	9.8	278	31	9.4	9.0	285	5	7.6	6.9	277	1	9.0	9.0	265	2	8.7	8.7	275	6	8.4	8.1	263				
4.5 "	19	9.4	8.9	265	31	9.1	8.7	280	1	5.0	5.0	355	1	4.0	4.0	295	1	2.0	2.0	250	3	9.2	8.4	270				
5.4 "	18	8.3	6.9	262	30	8.1	7.2	278									1	1.0	1.0	265								
6.0 "	16	7.8	6.2	269	30	7.1	5.4	283																				
7.2 "	10	7.0	3.6	252	30	6.7	3.8	283																				
9.0 "	2	6.0	5.9	074	30	5.7	1.9	060																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	MINICOY												NAGPUR/SONEGAON											
	0530				1730*				2330				0530*				1130				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	4.2	3.8	284	31	5.0	4.6	283	31	4.1	3.8	285	27	2.6	2.1	267	31	3.6	3.1	272	28	3.5	3.1	266
0.15 a.g. . .	30	7.4	6.6	280	31	7.9	7.1	281	30	6.4	5.9	282	27	7.0	6.5	275	27	5.2	4.7	276	28	7.3	6.3	276
0.3 a. m. s. l. .	30	8.0	7.4	284	31	8.5	7.9	286	30	7.1	6.3	282												
0.6 " . . .	29	9.5	8.8	285	31	9.6	9.1	291	29	9.1	8.7	288	27	8.4	7.7	279	27	5.0	4.6	284	28	7.2	6.3	278
0.9 " . . .	28	10.7	10.0	293	31	10.7	10.4	296	29	10.7	10.3	292	27	10.0	9.2	290	25	5.7	5.3	290	28	7.6	6.8	282
1.5 " . . .	27	11.4	11.0	297	31	11.3	11.1	297	28	10.5	10.3	295	25	8.6	7.7	294	10	5.3	4.3	307	28	7.9	7.0	292
2.1 " . . .	27	10.7	10.5	291	31	10.6	10.5	292	23	9.7	9.5	291	25	6.9	6.2	294	2	1.7	1.5	291	28	7.7	6.5	295
3.0 " . . .	24	8.9	8.7	282	31	10.0	9.7	289	12	8.9	8.7	283	26	6.0	4.4	294					28	5.9	3.9	306
3.6 " . . .	20	8.2	7.8	282	31	9.7	6.1	297	4	6.1	6.1	277	27	5.0	2.7	315					28	5.1	2.9	307
4.5 " . . .	14	8.1	7.8	289	31	8.3	7.2	285	1	8.0	8.0	265	27	4.7	1.2	008					28	4.3	0.6	005
5.4 " . . .	5	5.1	3.1	274	31	6.0	4.5	281					27	5.4	2.8	065					28	4.7	1.4	073
6.0 " . . .	5	3.9	2.5	055	31	5.9	3.5	290					27	6.4	3.8	063					27	5.0	2.3	084
7.2 " . . .	2	3.0	1.6	069	31	5.8	0.8	128					27	6.7	5.5	079					27	6.5	5.3	093
9.0 " . . .	1	12.0	12.0	085	31	8.1	6.9	092					25	10.1	9.1	095					24	10.3	9.6	093

Station	NAGPUR/SONEGAON				NEW DELHI/SAFDARJUNG												POONA							
	2330				0530*				1130				1730*				2330				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.8	1.5	256	31	1.2	0.8	110	31	2.9	1.3	098	31	1.8	1.3	102	31	2.1	1.8	107	31	0.8	0.8	270
0.15 a.g. . .	24	6.4	4.9	255	31	5.9	3.8	125	25	4.0	2.7	110	31	4.5	3.3	102	29	5.0	4.0	123	29	5.7	5.6	262
0.3 a. m. s. l. .					31	5.1	3.0	121	25	3.9	2.6	106	31	4.4	3.2	101	29	4.0	3.3	120				
0.6 " . . .	24	7.2	6.1	271	31	5.9	3.6	128	25	4.4	2.7	119	31	4.7	3.7	100	29	5.4	4.3	140	29	3.0	2.9	258
0.9 " . . .	23	7.1	5.9	279	31	6.1	3.8	135	23	4.4	1.9	112	31	4.8	3.0	091	29	5.0	3.3	135	29	7.6	7.5	265
1.5 " . . .	22	5.9	5.0	285	30	5.9	2.5	107	16	5.6	1.6	098	31	5.1	2.1	088	27	5.0	2.0	118	15	12.5	12.3	272
2.1 " . . .	19	4.7	3.9	288	30	5.9	1.9	079	11	5.7	1.8	063	31	5.5	1.8	066	20	4.7	0.8	101	4	11.0	10.8	278
3.0 " . . .	9	4.1	2.4	285	31	5.9	1.9	054	3	4.3	3.4	031	31	5.8	1.7	058	17	3.9	1.4	024	2	7.3	6.8	272
3.6 " . . .	4	1.4	0.9	241	31	5.2	2.1	051	3	5.3	3.2	028	31	5.3	1.8	048	1	1.0	1.0	125				
4.5 " . . .	1	1.0	1.0	035	31	4.5	1.8	076	1	4.0	4.0	335	30	4.9	0.8	088								
5.4 " . . .	1	1.5	1.5	080	31	3.9	1.7	094	1	3.0	3.0	350	30	4.3	0.6	308								
6.0 " . . .	1	2.0	2.0	115	31	4.0	1.0	082	1	3.0	3.0	345	30	4.8	0.7	307								
7.2 " . . .					31	4.7	0.8	126					30	5.4	1.1	261								
9.0 " . . .					31	5.8	2.0	142					29	5.6	1.1	169								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	POONA								PORT BLAIR															
	1730				2330				0530*				1130				17302				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.1	2.1	269	31	1.2	1.2	270	31	4.0	3.7	233	31	6.7	6.5	234	31	3.9	3.8	226	31	4.6	4.4	227
0.15 a. g. . .	28	9.3	8.1	258	27	6.6	6.5	260	28	8.2	7.7	229	27	8.9	8.6	230	29	7.8	7.7	232	26	8.4	8.2	231
0.3 a. m. s. l. . .									28	8.5	8.1	229	27	9.9	9.7	233	29	8.5	8.2	235	26	9.2	9.0	231
0.6 „ . . .	28	4.9	4.9	260	27	3.3	3.3	258	28	11.5	11.0	233	26	11.8	11.4	239	29	10.8	10.5	238	26	10.9	10.6	338
0.9 „ . . .	27	9.4	9.2	260	27	8.2	8.1	264	28	12.4	11.9	239	18	12.5	12.0	245	29	11.3	11.0	243	19	11.4	11.1	243
1.5 „ . . .	20	12.3	12.0	269	18	12.1	12.0	272	28	11.2	10.9	244	9	9.8	9.5	260	29	11.4	11.0	247	14	11.5	11.3	255
2.1 „ . . .	5	12.7	12.4	270	8	11.1	11.0	275	26	10.5	10.2	245	3	10.8	10.7	270	25	11.2	11.0	246	1	9.5	9.5	250
3.0 „ . . .	2	7.0	7.0	262	1	6.5	6.5	280	22	8.6	8.1	248					19	9.2	8.7	248				
3.6 „ . . .					1	3.5	3.5	285	18	8.6	7.7	249					15	8.5	8.0	249				
4.5 „ . . .					1	1.0	1.0	030	16	7.6	7.2	249					11	6.4	5.8	258				
5.4 „ . . .									12	6.5	4.6	266					10	5.3	4.5	236				
6.0 „ . . .									12	5.5	3.6	256					10	5.1	3.3	250				
7.2 „ . . .									12	4.9	1.8	253					8	3.0	0.8	082				
9.0 „ . . .									8	6.9	4.6	080					8	8.6	8.0	070				

Station	RAIPUR								RAXAUL								SILIGURI/ BAGHDOGRA											
	0530				1730				2330				0530				1730				0530							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.0	1.9	234	31	1.8	1.4	234	31	2.4	2.2	218	31	1.7	1.6	085	31	1.4	1.1	097	31	1.9	1.7	051				
0.15 a. g. . .	26	6.7	6.4	239	28	4.4	3.1	250	27	6.5	5.8	235	27	6.6	6.5	093	29	4.9	4.2	101	19	5.4	5.1	068				
0.3 a. m. s. l. . .													27	7.1	7.0	100	29	5.1	4.5	100	19	5.5	5.1	076				
0.6 „ . . .	26	7.7	7.0	261	28	4.9	3.5	254	27	6.8	6.1	242	27	8.3	8.2	113	29	5.9	5.6	107	19	6.1	5.7	090				
0.9 „ . . .	22	6.7	6.1	279	28	5.1	3.6	263	27	6.1	6.3	252	25	7.9	7.7	114	27	6.8	6.6	109	14	6.0	5.7	087				
1.5 „ . . .	14	5.2	4.8	297	27	4.9	2.5	272	25	4.6	3.0	272	20	8.0	7.9	107	21	6.5	6.0	116	12	5.5	4.7	086				
2.1 „ . . .	13	4.1	3.5	297	24	5.0	1.8	272	25	4.0	1.9	267	15	6g0	5.7	107	18	6.1	5.9	115	8	5.1	4.2	090				
3.0 „ . . .	6	3.4	1.5	306	19	4.2	0.9	240	17	2.9	0.8	326	10	5.1	4.5	102	17	5.9	5.7	117	5	5.4	3.2	077				
3.6 „ . . .	5	3.2	1.0	178	15	4.3	0.8	202	8	2.7	1.6	075	7	3.0	2.1	121	15	5.2	4.8	116	4	5.5	3.8	105				
4.5 „ . . .	3	4.8	2.8	095	14	3.7	0.9	143	5	5.1	3.6	077	5	3.4	2.6	140	9	2.9	1.6	130	3	4.0	0.7	171				
5.4 „ . . .	2	2.7	0.9	128	12	4.8	1.5	135					4	3.9	2.0	123	5	3.0	1.8	092	1	2.5	2.5	100				
6.0 „ . . .	1	3.5	3.5	085	9	4.3	2.3	145					3	4.7	2.2	130					1	4.5	4.5	090				
7.2 „ . . .					6	3.6	1.9	114					2	7.0	0.3	206					1	4.0	4.0	100				
9.0 „ . . .					4	6.4	6.1	091													1	14.5	14.5	100				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km, above mean sea level

August, 1968 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	SILIGURI/BAGHDOGRA								SRINAGAR								TIRUCHIRAPALLI							
	1730				2330				0530*				1730*				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.1	1.5	083	31	1.8	1.6	049	27	0.4	0.4	142	23	0.5	0.3	163	31	4.8	4.7	271	31	6.8	5.6	271
0.15 a. g. . .	29	3.4	2.5	084	26	4.2	4.1	079	27	2.4	0.8	062	23	2.3	0.6	155	31	8.5	8.2	275	31	7.8	6.5	27
0.3 a. m. s. l. . .	29	3.4	2.6	087	26	4.3	4.1	084									31	10.1	10.0	275	31	8.1	7.1	270
0.5 „ . . .	29	3.5	2.8	099	26	4.3	4.1	092									31	12.5	12.4	275	31	9.0	8.5	26
0.9 „ . . .	27	3.4	2.4	106	25	4.1	3.6	098									31	11.3	11.0	278	31	9.9	9.6	267
1.5 „ . . .	23	4.3	2.6	124	22	4.9	2.9	118									31	8.6	8.2	276	31	9.8	9.5	262
2.1 „ . . .	17	4.0	2.3	139	17	4.0	2.3	130	27	2.2	0.9	010	23	2.6	0.6	177	31	8.1	7.5	280	28	9.8	9.5	267
3.0 „ . . .	11	4.4	2.4	144	10	4.5	2.1	139	27	2.3	1.4	308	23	2.7	1.0	318	31	8.3	8.0	287	26	11.0	10.7	280
3.6 „ . . .	6	4.5	2.1	187	2	4.5	3.7	119	27	2.0	0.6	314	23	2.8	1.7	311	29	8.4	8.2	278	19	10.7	10.3	285
4.5 „ . . .	4	5.6	2.1	162					27	2.7	0.6	307	23	2.7	1.1	325	23	7.3	6.9	273	13	9.2	8.6	281
5.4 „ . . .	2	4.5	4.3	117					27	4.1	1.6	255	23	3.4	1.2	345	18	6.4	5.5	269	8	7.6	6.4	280
6.0 „ . . .	2	4.5	3.9	120					27	5.6	3.2	262	23	5.2	3.2	293	11	5.5	3.2	248	5	6.0	4.0	268
7.2 „ . . .	2	3.3	3.1	127					27	9.8	8.0	267	23	9.0	7.4	275	9	3.3	1.4	130	3	4.8	4.2	297
9.0 „ . . .	2	2.5	2.1	089					26	15.9	14.6	257	22	15.8	13.7	260	2	8.7	8.7	082	2	6.7	4.7	358

Station	TIRUCHIRAPALLI				TRIVANDRUM												UDAIPUR							
	2330				0530*				1130				1730*				2330				0530			
Time in I. S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	5.3	4.9	265	31	2.0	1.7	337	31	3.2	2.8	308	31	4.5	4.2	307	31	2.3	2.1	323	31	0.5	0.4	254
0.15 a. g. . .	29	7.7	7.0	260	31	7.2	6.7	327	31	6.5	5.8	300	31	8.6	8.3	306	27	7.6	7.0	314	24	3.6	2.8	264
0.3 a. m. s. l. . .	29	8.2	7.5	259	31	8.0	7.5	321	31	7.0	6.4	300	31	9.1	8.6	305	27	9.1	8.5	314				
0.6 „ . . .	29	9.5	9.2	266	31	10.6	10.1	311	31	9.4	8.7	303	31	10.7	10.3	307	27	11.4	10.8	311				
0.9 „ . . .	29	10.4	10.2	269	31	11.8	11.5	307	28	11.7	11.0	306	31	12.2	11.9	310	26	12.5	12.1	310	24	4.8	3.6	279
1.5 „ . . .	29	10.4	10.2	271	31	12.6	12.2	302	13	14.2	13.8	310	31	13.0	12.8	308	22	13.0	12.8	310	20	4.4	3.0	283
2.1 „ . . .	29	9.5	9.3	275	31	12.5	12.2	298	5	16.1	15.8	306	31	12.3	11.9	301	13	11.8	11.5	297	17	3.2	1.4	030
3.0 „ . . .	26	9.4	9.2	281	31	11.1	10.8	290	2	7.0	7.0	301	31	11.5	11.1	294	8	9.9	9.6	293	12	4.5	3.1	040
3.6 „ . . .	21	8.6	8.3	276	31	8.7	8.0	284	1	1.5	1.5	345	31	9.5	8.1	288	1	4.0	4.0	255	8	4.8	3.4	046
4.5 „ . . .	15	6.5	5.8	249	31	6.6	6.0	282					31	7.2	6.4	283	1	6.0	6.0	230	4	3.6	2.4	352
5.4 „ . . .	1	10.5	10.5	285	31	6.0	4.9	278					31	5.6	4.1	264					4	2.3	0.7	077
6.0 „ . . .					31	5.3	2.6	265					31	5.8	2.8	265					4	4.1	2.5	068
7.2 „ . . .					31	5.1	1.0	092					31	5.7	0.6	326					3	6.2	6.1	066
9.0 „ . . .					31	8.3	6.3	094					30	8.6	6.3	100					1	7.5	7.5	115

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	UDAIPUR								VENGURLA												VERAVAL			
	1730				2330				0530				1730				2330				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	1.2	1.0	286	31	0.1	0.1	272	31	0.8	0.6	284	31	1.7	1.4	267	31	1.1	0.8	286	31	6.9	6.7	271
0.15 a. g.	26	4.0	3.1	253	26	3.7	3.3	255	23	6.3	5.6	269	24	6.8	6.3	275	23	5.9	5.4	270	30	8.6	8.3	265
0.3 a. m. s. l.									23	7.8	7.3	269	24	9.3	8.9	279	23	7.5	7.2	271	30	9.9	9.6	268
0.6 "									21	10.0	9.8	273	23	11.6	11.3	280	23	10.2	9.9	274	30	11.1	10.9	270
0.9 "	26	4.3	3.6	268	26	4.7	4.3	265	11	10.3	10.2	278	16	13.4	13.0	283	14	11.6	11.4	279	26	11.5	11.4	268
1.5 "	25	5.3	3.9	281	23	4.1	3.0	265	2	10.3	10.3	284	4	14.3	14.2	289	4	11.4	11.0	279	13	11.0	10.9	262
2.1 "	18	5.2	3.3	318	18	3.8	1.8	012					1	8.0	8.0	280	1	7.0	7.0	295	6	11.5	11.1	256
3.0 "	9	5.2	3.1	352	10	4.5	3.8	032													5	12.7	10.8	269
3.6 "	6	4.2	2.4	003	8	4.3	3.6	044													2	5.0	2.8	324
4.5 "	4	6.3	4.1	357	3	6.5	5.0	066																
5.4 "	2	3.7	3.5	269																				
6.0 "	2	3.7	3.1	303																				
7.2 "	1	2.0	2.0	040																				
9.0 "																								

Station	VERAVAL								VIJAYWADA/GANNAVARAM												VISHAKHAPATNAM							
	1730				2330				0530				1730				2330				0530*							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	7.5	7.3	272	31	6.7	6.4	266	31	2.8	2.5	251	31	3.4	2.8	273	31	3.1	2.5	240	31	3.9	3.4	230				
0.15 a. g.	29	8.7	8.6	267	28	8.5	8.3	260	22	7.9	7.4	257	30	5.8	5.0	268	22	7.5	6.6	252	31	6.6	5.8	297				
0.3 a. m. s. l.	29	9.3	9.2	268	28	9.8	9.6	264	22	9.4	9.2	270	30	6.2	5.7	267	22	8.5	7.6	255	31	6.8	6.0	285				
0.6 "	29	10.4	10.3	270	28	11.0	10.8	266	22	13.4	13.2	277	30	7.9	7.5	271	22	9.8	9.2	268	31	7.7	6.7	266				
0.9 "	26	10.9	10.8	271	28	11.1	10.9	260	22	13.5	13.3	286	29	9.6	9.3	280	22	10.5	9.9	275	31	8.2	7.1	271				
1.5 "	17	9.6	9.4	263	23	9.7	9.4	260	18	11.5	11.2	288	27	11.1	10.8	283	21	11.4	10.8	283	31	8.5	7.7	277				
2.1 "	11	8.6	7.8	263	11	7.2	6.9	240	18	9.9	9.4	288	25	11.6	11.4	284	17	10.5	10.1	284	31	8.0	7.3	278				
3.0 "	10	7.1	5.7	263	6	3.6	2.0	238	17	7.8	7.2	282	16	9.9	9.6	281	13	9.0	8.6	275	31	7.3	6.7	279				
3.6 "	10	6.4	4.7	260	3	3.2	3.2	214	13	7.2	6.4	282	11	6.7	6.1	287	6	6.0	5.1	261	31	6.7	5.8	277				
4.5 "	10	5.2	2.6	243	3	3.2	1.9	098	6	5.9	4.8	279	9	5.2	3.5	308	2	3.0	1.7	210	31	5.0	1.7	282				
5.4 "	10	3.9	1.6	165	1	5.5	5.5	105	3	4.5	1.4	259	5	3.8	2.6	293	1	3.0	3.0	075	31	5.1	0.7	222				
6.0 "	10	4.4	1.3	102	1	7.0	7.0	105	3	4.8	1.1	304	4	5.0	2.8	293	1	5.5	5.5	065	31	5.7	2.3	112				
7.2 "	9	4.4	2.8	093	1	9.5	9.5	080	2	7.3	5.5	051	3	4.7	2.8	335					31	6.0	3.7	099				
9.0 "	8	8.1	8.0	092					2	10.0	9.7	098	3	4.0	2.3	100					30	9.1	8.3	096				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9·0 Km. above mean sea level

August, 1963 (Sravana 10,—Bhadra 9, 1885 Saka)

Station	VISHAKHAPATNAM											
	1130				1730*				2330			
Time in I.S.T.												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	4·1	3·8	241	31	4·2	3·5	275	31	2·3	2·0	248
0·15 a.g. . .	29	5·1	4·7	233	31	6·1	5·1	273	30	5·3	4·9	240
0·3 a.m.s.l. .	29	5·5	5·0	243	31	6·7	5·5	263	30	6·8	6·6	250
0·6 „ . . .	29	4·9	4·5	255	31	8·0	7·3	253	30	7·9	7·6	261
0·9 „ . . .	27	5·3	5·0	277	31	7·7	5·9	259	27	8·1	7·8	271
1·5 „ . . .	23	6·9	6·4	297	31	7·3	6·1	278	26	8·2	7·7	268
2·1 „ . . .	20	7·0	6·5	289	31	7·2	6·4	285	25	6·2	5·6	274
3·0 „ . . .	18	7·1	6·6	283	31	6·4	5·6	288	18	5·0	3·9	261
3·6 „ . . .	13	5·5	3·5	274	31	6·0	4·5	297	12	4·1	2·0	261
4·5 „ . . .	6	3·7	1·9	143	31	5·8	2·7	291	8	4·1	2·0	071
5·4 „ . . .	2	4·7	1·7	117	31	6·4	1·7	290	4	6·1	4·7	076
6·0 „ . . .	1	4·5	4·5	165	31	5·6	0·5	049	4	5·0	4·0	070
7·2 „ . . .	1	4·5	4·5	120	31	6·3	3·2	095				
9·0 „ . . .	1	12·0	12·0	110	31	8·2	6·3	079				
Station												
Time in I.S.T.												
Ht. in Km.												
Surface . . .												
0·15 a.g. . .												
0·3 a.m.s.l. .												
0·6 „ . . .												
0·9 „ . . .												
1·5 „ . . .												
2·1 „ . . .												
3·0 „ . . .												
3·6 „ . . .												
4·5 „ . . .												
5·4 „ . . .												
6·0 „ . . .												
7·2 „ . . .												
9·0 „ . . .												

TABLE V.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 km. above mean sea level

August, 1963 (Sravana 10—Bhadra 9, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	
	AHMADABAD 0530 hr.*					0530 hr.—Contd.					DIBRUGARH/MOHAN BARI 0530 hr.					MADRAS/MINAM- BAKKAM 0530 hr.*				
10.5	25	11.6	11.1	088	16.2	1	23.5	23.5	095	10.5	3	13.3	12.0	075	10.5	30	10.9	9.5	079	
12.0	18	17.4	16.9	090	18.0	1	27.0	27.0	100	12.0	1	14.5	14.5	095	12.0	28	17.4	16.8	085	
14.1	12	25.0	24.5	088	21.0	1	24.0	24.0	070	14.1	1	2.0	2.0	085	14.1	22	28.0	27.3	083	
16.2	7	31.7	30.8	094		BHAGALPUR 0530 hr.					GANGTOK 0530 hr.				16.2	20	30.4	29.9	080	
18.0	1	21.5	21.5	075	10.5	1	10.5	10.5	040	12.0	1	11.5	11.5	075	18.0	12	27.3	26.9	092	
21.0	1	5.0	5.0	090	14.1	1	15.0	15.0	050	10.5	2	4.5	4.5	141	21.0	1	36.0	36.0	085	
	1730 hr.*					BHUJ/RUDRAMATA 1730 hr.					GAUHATI 0530 hr.*					1130 hr.				
10.5	27	12.8	12.5	088	10.5	1	13.5	13.5	095	12.0	1	2.0	2.0	065	10.5	1	11.5	11.5	085	
12.0	25	17.5	16.8	092		BIKANER 0530 hr.				10.5	15	7.0	5.2	071	12.0	1	17.0	17.0	075	
14.1	19	27.4	26.0	090	10.5	3	5.8	5.1	045	12.0	12	9.7	8.8	076	10.5	30	9.6	8.4	092	
16.2	12	30.0	29.0	093		BOMBAY/SANTA CRUZ 0530 hr.*				14.1	4	12.1	11.5	060	12.0	29	15.0	13.6	083	
18.0	6	35.4	35.2	087	10.5	25	11.9	9.6	087	16.2	1	14.5	14.5	045	14.1	19	23.3	21.3	080	
	ALLAHABAD/BAMHRAULI 0530 hr.*				12.0	24	16.0	15.4	090	18.0	1	24.5	24.5	100	16.2	15	29.0	28.6	094	
10.5	16	10.0	8.9	097	14.1	18	21.2	19.4	090		1130 hr.				18.0	9	25.4	25.1	094	
12.0	10	11.1	10.6	086	16.2	14	25.7	24.5	090	10.5	2	8.3	8.1	089	21.0	2	24.5	24.1	092	
14.1	2	19.5	19.1	089	18.0	6	24.0	23.3	082	12.0	1	23.0	23.0	095		MINICOY 1730 hr.*				
	1730 hr.*				21.0	3	21.0	20.8	096	10.5	16	8.2	7.7	057	10.5	31	15.7	14.5	086	
10.5	17	11.9	10.0	095	24.0	1	21.5	21.5	070	12.0	14	11.7	10.7	067	12.0	31	21.7	20.7	084	
12.0	8	15.2	14.7	089		1730 hr.*				14.1	10	16.5	14.4	061	14.1	30	31.5	31.0	086	
14.1	2	21.0	20.5	100	10.5	23	11.9	10.5	085	16.2	6	18.1	16.8	064	16.2	25	24.1	23.1	090	
	AMBALA 0530 hr.				12.0	22	15.3	14.4	091	18.0	3	15.0	15.0	085	18.0	20	23.0	22.8	088	
10.5	1	9.0	9.0	235	14.1	15	23.1	22.3	085	21.0	1	12.0	12.0	060	21.0	7	27.0	26.8	095	
12.0	1	8.0	8.0	235	16.2	12	31.9	31.2	088		GOPALPUR 1730 hr.				24.0	2	21.0	21.0	086	
	ANANTAPUR 0530 hr.				18.0	10	31.5	30.8	092	10.5	1	6.0	6.0	070		NAGPUR/SONEGAON 0530 hr.*				
10.5	1	7.0	7.0	095	21.0	5	21.4	20.0	101	12.0	1	11.5	11.5	085	10.5	22	13.2	12.3	084	
12.0	1	17.0	17.0	095	24.0	1	28.0	28.0	065		JODHPUR 0530 hr.*				12.0	14	19.9	19.2	084	
	ASANSOL 0530 hr.					CALCUTTA/DUMDUM 0530 hr.*				10.5	19	8.0	6.0	090	14.1	12	26.3	26.0	078	
10.5	1	3.5	3.5	075	10.5	28	12.6	11.8	098	12.0	17	9.9	6.3	086	16.2	7	28.8	28.3	073	
	AURANGABAD/CHIKAL- THAN 1730 hr.				12.0	25	17.3	16.8	085	14.1	10	9.9	8.3	103	18.0	4	20.6	20.5	098	
10.5	1	5.5	5.5	050	14.1	21	20.8	19.6	082	16.2	3	15.0	15.0	102	21.0	2	16.5	16.5	080	
12.0	1	12.0	12.0	105	16.2	13	25.0	17.0	084	18.0	2	14.5	14.0	107		1730 hr.*				
14.1	1	16.0	16.0	105	18.0	3	31.0	31.0	102		1130 hr.				10.5	22	16.5	16.1	091	
	BAHRAICH 1730 hr.				21.0	2	21.5	21.5	080	10.5	1	5.5	5.5	100	12.0	20	20.4	19.7	085	
10.5	4	6.5	6.2	096	24.0	1	24.0	24.0	090		1730 hr.*				14.1	19	26.2	25.1	078	
12.0	2	6.3	6.3	072		1730 hr.*				10.5	22	6.9	5.2	078	16.2	9	32.0	31.3	080	
14.1	1	7.0	7.0	065	10.5	27	12.6	11.3	090	12.0	15	9.0	7.7	085	18.0	6	24.9	24.6	090	
	BEGAMPET 0530 hr.				12.0	25	16.2	15.6	085	14.1	10	12.5	11.5	099	21.0	5	24.4	24.2	090	
10.5	1	3.5	3.5	145	14.1	18	19.3	18.6	077	16.2	2	14.2	14.0	100	24.0	1	26.0	26.0	120	
12.0	1	9.0	9.0	105	16.2	10	25.0	24.4	080											
14.1	1	14.0	14.0	095	18.0	3	27.8	27.7	082											

RADIOSONDE DATA**August, 1963 (Sravana 10—Bhadra 9, 1885 Saka)**

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I.M.D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in G.M.T. during the month	Remarks
1	Ahmadabad	Fan type	20th July 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13th December, 1946 to 30th November, 1947.
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Minicoy	Fan type	12th May 1946	12	
10	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December, 1943	00 and 12	
12	Port Blair	Fan type	4th December, 1949	00 and 12	
13	Srinagar	Clock type	1st Aug., 1962	00 and 12	
14	Trivandrum	Fan type	1st July, 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES
(B) From Ascents At 12 Hours GMT.

August, 1963 (Sravana 10 —Bhadra 9, 1885 Saka)

Standard Pressure Surface mb.	SRI NAGAR Surf. Pr. (832 mb.)						TRIVANDRUM (1000 mb.)						VISHAKHAPATNAM (995 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A.				No. of Obs.	Ht. gpm.	Temperature °A.				No. of Obs.	Ht. gpm.	Temperature °A.			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean.	Max.	Min.	Dew point.
Surface	24	1588	301.5	305	296	291.0	31	064	300.5	302	298	296.8	31	041	301.9	304	300	298.1
1000	24	—065	..	..	..	..	31	064	..	..	..	..	31	—007	..	..	..	..
900	24	890	..	..	..	..	31	990	293.9	297	291	290.5	31	933	296.3	299	293	292.7
850	24	1407	..	..	..	..	31	1484	291.3	295	289	286.0	31	1432	293.5	297	291	290.4
800	24	1930	299.0	304	292	286.1	31	2002	288.4	291	287	284.0	31	1955	290.4	295	289	288.1
750	24	3099	290.6	297	283	277.4	31	3127	283.2	287	280	276.8	31	3088	284.8	288	283	282.3
600	24	4396	281.0	288	274	268.2	31	4396	276.2	279	263	269.0	31	4365	278.2	281	275	275.3
500	24	5869	271.2	276	267	..	31	5854	268.3	271	265	..	31	5839	270.4	273	268	..
400	23	7613	261.6	268	257	..	31	7576	257.7	261	255	..	31	7575	259.5	266	255	..
300	21	9763	248.7	253	244	..	31	9690	242.5	247	239	..	31	9710	245.4	253	239	..
250	19	11061	239.1	246	234	..	31	10966	232.4	239	225	..	28	10986	235.4	241	227	..
200	16	12652	228.9	234	222	..	31	12441	219.5	229	211	..	27	12482	222.6	227	216	..
175	14	13478	222.6	228	215	..	31	13281	213.5	223	207	..	27	13329	216.0	220	211	..
150	14	14465	215.2	222	205	..	31	14241	206.7	217	195	..	27	14302	208.2	213	201	..
125	11	15596	207.9	215	199	..	31	15323	200.5	209	187	..	26	15372	202.3	207	193	..
100	11	16939	203.9	209	195	..	27	16646	198.8	211	189	..	23	16724	199.1	206	194	..
80	7	18309	206.9	213	203	..	25	17905	202.5	211	190	..	22	18135	202.9	212	194	..
70	7	18912	210.0	215	206	..	21	18756	204.0	212	193	..	21	18871	206.1	213	198	..
60	5	20123	213.8	216	211	..	18	19674	207.6	214	194	..	18	19808	209.4	217	204	..
50							16	20792	211.8	218	199	..	15	20883	211.4	217	204	..
40							10	22247	215.9	219	209	..	7	22248	213.0	217	210	..
30																		
20																		
10																		

NOTE.—Number of observations refer to those of dynamic height.

Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273 °A.

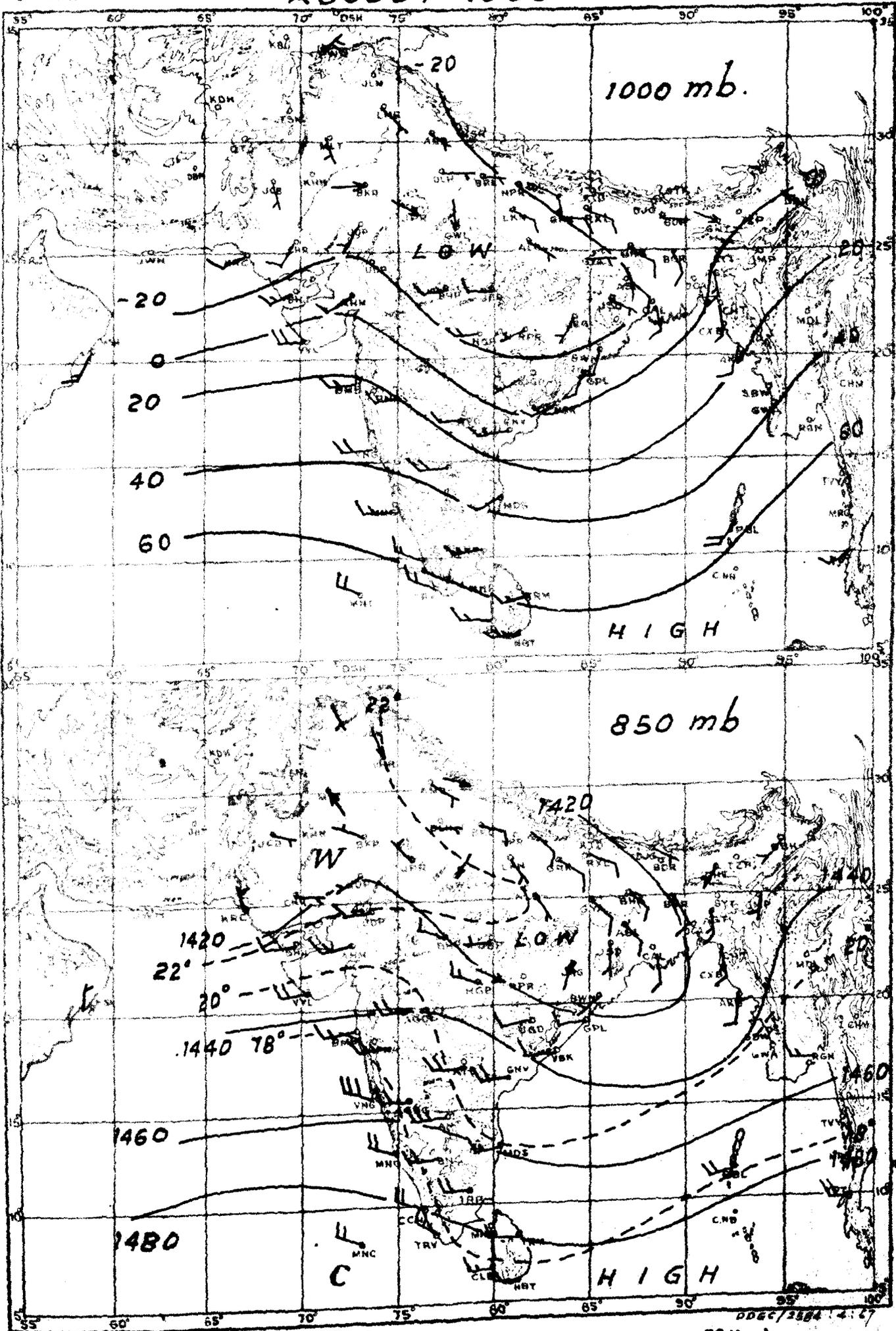
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I. Met. D.

AUGUST 1963

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

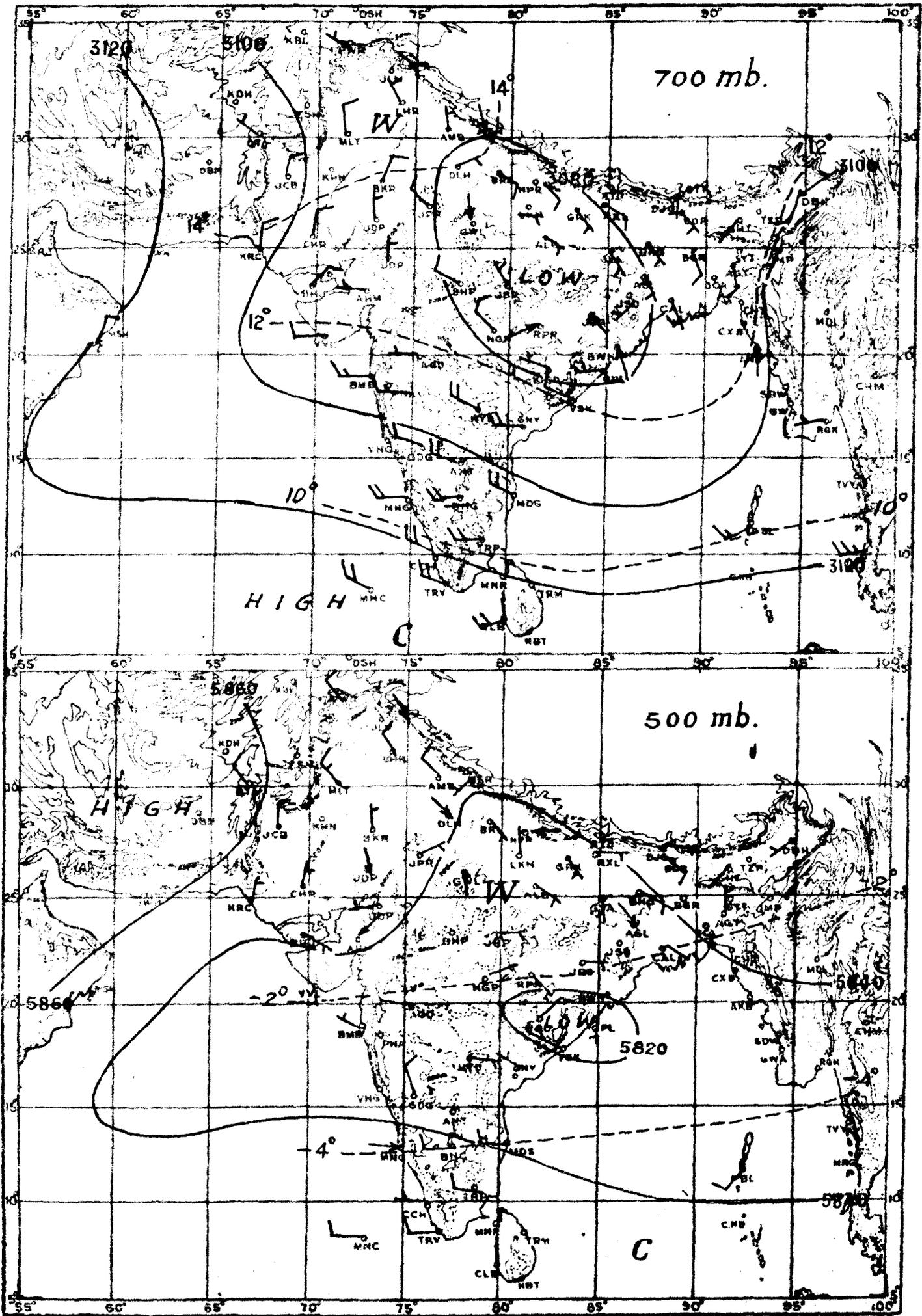
G.P.M. 8-20004, 100

MONTHLY MEAN CONSTANT PRESSURE CHARTS

AUGUST 1963

I. Met. D.

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

September

Published by authority of the Government of India

Chief features:—

- (i) Monsoon fairly active in most parts of north India and weak in the Peninsula during the first fortnight;
- (ii) Heavy rains in west Uttar Pradesh leading to serious floods;
- (iii) Withdrawal of the monsoon from northwest India, Uttar Pradesh, Gujarat State and north Madhya Pradesh during the second half of the month; and
- (iv) Formation and movement of two Bay depressions.

Under the influence of a low pressure wave from the east, an upper air cyclonic circulation developed over the northeast and adjoining east central Bay of Bengal on 2nd. Moving northwestwards, it became active and lay as a low pressure area over Gangetic West Bengal and adjoining Orissa on 4th. Thereafter, it moved westnorthwestwards to south Rajasthan on 7th and later merged into the seasonal low by 9th. Under its influence, the monsoon activity increased over northeast India in the beginning of the month. The belt of heavy monsoon rainfall shifted from Gangetic West Bengal and Orissa on 4th to Gujarat State and east Rajasthan. The monsoon was vigorous in Gujarat Region from 7th to 10th. Some of the noteworthy amounts of rainfall recorded during this spell were : Hoshangabad 12 cm on 5th, Radhanpur and Tonk Raj 10 cm each on 8th, Idar 18 cm on 9th and 19 cm on 10th and Ahmedabad 10 cm on 9th and 11 cm on 10th. According to press reports, the heavy rains in Gujarat State and Rajasthan led to serious floods causing considerable damage to standing crops and disruption of traffic.

A low pressure area moving from the east concentrated into a depression over the Gulf of Martaban and neighbourhood by the morning of 8th with centre about 100 kms south of Rangoon. Moving northwestwards, it further intensified into a deep depression the next day and was centred about 80 kms eastsoutheast of Sandheads on 11th morning. Thereafter, it moved westnorthwestwards till 13th morning, crossing coast near Balasore during the night of 11th-12th. Later it changed slowly to a northnorthwesterly course and began to weaken after 15th evening. It became unimportant over the Punjab (I) by 17th. In association with it, heavy rains occurred in the Bay Islands. Long Island recorded 10 cm of rain on 5th, Car Nicobar 11 cm on 6th and Mayabandar 12 cm on 8th. The monsoon was also vigorous in Gangetic West Bengal and Orissa on 11th and in east Madhya Pradesh on 12th to 14th and active in west Uttar Pradesh and the Punjab later. Some of the noteworthy amounts of rainfall recorded were : Puri 12 cm on 11th, Sambalpur 16 cm and Phulbani 12 cm on 12th, Raipur 13 cm on 13th, Raipur and Seoni 15 cm each on 14th, Gwalior and Jhansi 21 cm each, Pachmarhi 18 cm and Mainpuri 14 cm on 15th and Nainital 22 cm, Nautanwa Bazar 19 cm, Najibabad 18 cm, New Delhi 17 cm Roorkee 15 cm and Aligarh 14 cm on 16th. The heavy rains caused by the deep depression led to flooding of the major rivers of Orissa, Vidarbha, west Uttar Pradesh and the Punjab (I) with consequent damage to public property and loss of life. The floods were all the more serious in the western district of Uttar Pradesh where 237 people were reported to have lost their lives. More than 50 lakhs of people in nearly 16,000 villages were affected and over 6 lakhs of houses were damaged or destroyed.

An upper air trough in the westerlies, which appeared over northwest India on 13th, moved away eastwards across Assam by 19th. In association with it, fairly well distributed rain with a few heavy falls occurred in northeast India during the third week.

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In the wake of the above upper air trough, the monsoon withdrew from Jammu and Kashmir, the Punjab (I) and west Rajasthan on 18th and subsequently from the rest northwest India, Gujarat State, Uttar Pradesh and north Madhya Pradesh during the course of the third week. The further withdrawal of the monsoon was arrested due to the development and movement of another deep depression.

A depression from the east moved into the east central Bay of Bengal on the morning of 25th when it was centred near Lat. 17.0°N and Long. 93.0°E . Moving northwestwards, it intensified into a deep depression by 26th and crossed coast just south of Balasore in the early hours of 27th. Thereafter, it moved in a northerly direction, weakened progressively and became unimportant over Bihar Plains by 30th. Under its influence, there was good rainfall activity in the Bay Islands and northeast India with a few heavy falls, particularly in Orissa and Bihar State. Some of the heavy falls of rain recorded were : Kondul 10 cm on 26th, Chandbali 19 cm on 27th, Ranchi and Hazaribagh 17 cm each and Calcutta 9 cm on 28th, Siliguri and Darjeeling 15 cm each, Purnea 13 cm and Cooch Behar and Kalimpong 12 cm each and Forbesganj 11 cm on 29th and Cherrapunji 21 cm on 30th. According to press reports, at least 15 persons lost their lives and serious damage was caused to standing crops and other public property in Orissa due to the heavy rains caused by the deep depression.

A feeble western disturbance moved into the northern divisions of West Pakistan on 26th. It slowly moved away eastwards across the extreme north of the country as an upper air trough. In association with it a number of showers occurred in the Western Himalayas towards the end of the month.

The monsoon weakened appreciably at the beginning of the month over the Peninsula. However, fairly well distributed rainfall occurred in the Madras State on the first day when Vellore recorded 8 cm of rain and Punalur 7 cm. The west coast also continued to get fairly widespread light to moderate rain till the middle of the month. A trough of low pressure persisted over the Peninsula from 18th to 23rd and another feeble one over the east central Arabian Sea off the Konkan-Kanara coasts till the end of the month. Under their influence, spells of rain or thundershowers occurred over most parts of the Peninsula during the second half of the month. Some of the heavy falls of rain recorded were : Tiruchchirappalli 12 cm on 19th, Mysore 8 cm on 21st, Cuddapha 7 cm on 23rd and Miraj 7 cm on 29th. A low pressure area which was developing over the north and central Bay of Bengal on the last day of the month caused a few heavy falls of rain in the Bay Islands. Mayabander recorded 15 cm of rain on 29th.

The total rainfall for the month was in moderate excess in the Bay Islands, and Orissa, in slight excess in Gangetic West Bengal, Bihar Plateau, east Madhya Pradesh, Gujarat Region and Kerala and normal in Bihar Plains, west Madhya Pradesh and the Madras State. It was in slight defect in east Uttar Pradesh, Rajasthan, south Interior Mysore and the Arabian Sea Islands and in large defect in west Uttar Pradesh, Madhwara and north Interior Mysore. It was in moderate defect over the rest of the country outside Himachal Pradesh.

The mean maximum temperature was above normal in Telangana and below normal in west Uttar Pradesh. It was normal over the rest of the country outside Himachal Pradesh. The mean minimum temperature was normal over the country outside Himachal Pradesh.

The mean relative humidity in the morning was normal over the country outside Himachal Pradesh.

The mean cloud amount in the morning was below normal in west Rajasthan and Rayalaseema and normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I. S. T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I. S. T. of the date given in the succeeding column.

POONA 5,

The 30th October, 1963

R. ANANTHAKRISHNAN,

for Director General of Observatories.

1	2	3	4	5	Relative humidity %		Cloud		1	2	3	4	5	Relative humidity %		Cloud	
					0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.						0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.
Division									Division—(contd.)								
1. Assam (Including Manipur, Tripura)	163.3 -108.7	60	31.9 +0.9	24.6 +0.6	82 -2	72	5.5 -0.4	4.6	8. Rajasthan	57.4 -18.5	76	34.0 +0.1	23.4 -0.4	72 0	54	2.5 -0.1	2.8
2. West Bengal	282.5 -21.6	93	32.1 +0.3	25.6 +0.2	82 -1	79	5.0 -0.3	5.3	9. Madhya Pradesh	225.6 +14.8	107	30.6 +0.2	22.0 -0.5	32 0	69	4.8 -0.1	5.1
3. Orissa	304.8 +66.1	128	31.7 +0.6	24.1 -0.7	85 +2	82	5.8 +0.5	6.1	10. Gujarat State	106.4 -7.9	93	31.8 -0.1	23.8 -0.4	83 +1	66	4.0 -0.5	4.1
4. Bihar	248.2 +28.3	113	31.7 +0.2	24.7 -0.1	82 +1	77	4.5 -0.5	4.8	11. Maharashtra State	140.9 -93.1	60	30.9 +0.7	22.4 +0.1	82 0	66	5.1 -0.2	5.7
5. Uttar Pradesh	224.4 +41.8	123	32.4 -0.4	23.6 -0.7	81 +2	70	3.3 -0.1	3.5	12. Andhra Pradesh	86.4 -74.7	54	33.3 +0.9	24.6 +0.2	77 -1	64	5.0 -0.4	5.5
6. Punjab (India) (Including Himachal Pradesh and Delhi)*	97.4 -45.1	68	33.7 -0.4	22.4 -0.9	74 +2	55	2.2 -0.3	2.0	13. Madras State	105.8 +9.8	110	34.2 +0.6	24.8 +0.2	70 -1	62	4.6 +0.5	5.2
7. Jammu and Kashmir	25.4 -24.0	51	25.1 +0.1	11.2 -0.7	65 -5	48	2.9 +0.4	3.0	14. Mysore	102.2 -73.8	58	30.0 +0.9	21.0 +0.2	85 +2	64	5.2 -0.1	6.2
									15. Kerala	250.1 +48.3	124	29.9 +0.8	23.9 +0.2	87 +1	79	5.2 -0.4	5.8
Sub-Division									Sub-Division—(contd.)								
1. Bay Islands	609.0 +167.0	138	28.4 0	23.8 +0.6	87 +3	88	6.7 +0.5	7.1	16. Madhya Pradesh (East)	265.2 +33.5	114	30.6 +0.2	22.7 -0.3	83 +1	74	5.0 0	5.6
2. Assam (Including Manipur, Tripura)	163.3 -108.7	60	31.9 +0.9	24.6 +0.6	82 -2	72	5.5 -0.4	4.6	17. Gujarat Region	186.1 +23.8	115	31.9 -0.3	23.4 -0.6	85 +2	64	4.4 -0.3	4.0
3. Sub-Himalayan West Bengal	286.3 -179.4	61	31.5 -0.1	24.9 +0.2	81 -2	76	5.0 +0.2	4.8	18. Saurashtra and Kutch	62.1 -25.5	71	31.7 -0.1	24.0 -0.3	82 0	68	3.7 -0.5	4.1
4. Gangetic West Bengal	281.1 +35.7	115	32.3 +0.4	25.8 +0.1	82 0	80	5.0 -0.5	5.4	19. Konkan	214.3 -110.0	66	29.7 +0.5	24.1 +0.1	87 +1	79	5.4 -0.5	5.3
5. Orissa	304.8 +66.1	128	31.7 +0.6	24.1 -0.7	85 +2	82	5.8 +0.5	6.1	20. Madhya Maharashtra	126.3 -69.1	65	31.2 +0.8	20.9 0	82 +1	62	5.0 0	5.8
6. Bihar Plateau	266.0 +48.3	122	31.3 +0.5	23.9 +0.1	83 +2	77	4.9 -0.3	5.4	21. Marathwada	89.3 -145.3	38	31.0 +0.4	21.5 +0.1	78 -1	61	4.9 -0.3	6.0
7. Bihar Plains	240.1 +19.0	109	32.0 0	25.3 -0.3	81 +1	76	4.2 -0.5	4.4	22. Vidarbha	98.6 -98.0	50	31.5 +0.7	23.1 +0.1	80 -2	64	5.0 -0.1	5.9
8. Uttar Pradesh (East)	146.3 -49.7	75	32.9 +0.1	24.0 -0.8	81 +1	71	3.7 0	3.7	23. Coastal Andhra Pradesh	82.5 -64.3	56	33.8 +0.9	25.6 +0.1	78 0	68	5.3 -0.1	5.5
9. Uttar Pradesh (West)	341.6 +179.0	21	31.7 -1.1	23.1 -0.5	81 +5	68	2.8 -0.3	3.2	24. Telangana	97.4 -90.3	52	32.4 +1.1	23.6 +0.3	80 0	67	4.9 -0.5	5.5
10. Punjab (India) (Including Delhi)	97.4 -45.1	68	33.7 -0.4	22.4 -0.9	74 +2	55	2.2 -0.3	2.0	25. Rayalaseema	77.0 -73.0	51	33.5 +0.6	23.9 +0.2	70 -3	50	4.5 -1.1	5.3
11. Himachal Pradesh	92.3 ..	..	30.8 ..	18.5 ..	87 ..	68	2.9 ..	3.1	26. Madras State	105.8 +9.8	110	34.2 +0.6	24.8 +0.2	70 -1	62	4.6 +0.5	5.2
12. Jammu and Kashmir	25.4 -24.0	51	25.1 +0.1	11.2 -0.7	65 -5	48	2.9 +0.4	3.0	27. Coastal Mysore	189.7 -126.6	60	29.8 +1.0	23.2 -0.3	88 -2	77	5.4 -0.6	5.7
13. Rajasthan (West)	34.7 -11.7	75	36.5 +0.9	24.3 -0.2	68 -2	44	1.3 -0.9	1.3	28. Interior Mysore (North)	55.1 +162.0	35	30.9 +1.0	21.3 +0.4	83 +2	60	5.6 +0.7	6.3
14. Rajasthan (East)	80.0 -25.2	76	31.9 -0.6	22.6 -0.6	75 +2	61	3.5 +0.5	3.9	29. Interior Mysore (South)	105.0 -27.0	80	29.3 +0.9	19.9 +0.3	85 +3	62	4.7 -0.4	6.4
15. Madhya Pradesh (West)	194.5 0	100	30.6 +0.1	21.5 -0.7	81 -1	65	4.5 -0.1	4.8	30. Kerala	250.1 +48.3	124	29.9 +0.8	23.9 +0.2	87 +1	79	5.2 -0.4	5.8
									31. Arabian Sea Islands	121.8 -33.9	78	30.5 +0.9	24.9 -0.3	80 0	77	5.3 +0.7	5.5

Note.—The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh not included.

MONTHLY MEANS OF UPPER WINDS

September, 1963 (*Bhadra 10—Asvina 8, 1885 Saka*)

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 39 stations all the observations were taken by means of pilot balloons and at 15 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n—represents the number of observations;

\bar{V} —represents the mean wind speed in metres per second irrespective of direction;

v—represents the resultant mean velocity in metres per second;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km.a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a.m.s.l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 & 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N	Long. E	Height of Anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (IST)		
1.	Agartala	23°53'	91°15'	17	28th Nov. 1951	0530	1730	2330
2.	Ahmadabad	23°04'	72°38'	61	19th May 1928	0530*	1130	1730*
3.	Allahabad/Bamhrauli	25°27'	81°44'	103	28th Feb. 1930	0530*	1130	1730*
4.	Ambala	30°23'	76°46'	279	1st Apr. 1941	0530	1130	1730
5.	Anantapur	14°41'	77°37'	365	12th Feb. 1946	0530	1730	2330
6.	Asansol	23°41'	86°59'	135	29th May 1942	0530	1730	2330
7.	Aurangabad/Chikalthan	19°51'	75°24'	583	7th Oct. 1951	0530	1730	2330
8.	Bhraich	27°34'	81°36'	134	1st Oct. 1961	0530	1130	1730
9.	Bangalore	12°58'	77°35'	936	19th May 1915	0530@	1130	1730@
10.	Bareilly	28°22'	79°24'	181	12th Jan. 1943	0530	1730	2330
11.	Begampet	17°27'	78°28'	543	1st Sep. 1929	0530	1730	2330
12.	Bhagalpur	25°14'	86°57'	61	19th May 1950	0530	1730	2330
13.	Bhopal/Bairagarh	23°17'	77°21'	532	26th Feb. 1943	0530	1730	2330
14.	Bhubaneshwar	20°15'	85°50'	54	5th Dec. 1942	0530	1730	2330
15.	Bhuj/Rudramata	23°15'	69°48'	90	14th Sep. 1937	0530	1730	2330
16.	Bikaner	28°00'	73°18'	229	18th Oct. 1946	0530	1730	2330
17.	Bombay/Santa Cruz	19°07'	72°51'	27	14th May 1933	0530*	1130	1730*
18.	Calcutta/Dum Dum	22°39'	88°27'	13	14th May 1921	0530*	1130	1730*
19.	Cochin/Willingdon†	09°56'	76°14'	13	16th Mar. 1942	0530	1730	2330
20.	Dehra Dun	30°19'	78°03'	692	1st Oct. 1958	0530	1730	2330
21.	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June 1948	0530	1130	1730
22.	Gadag	15°25'	75°38'	650	3rd May 1943	0530	1730	2330
23.	Gangtok	27°20'	88°37'	1778	1st June 1963	0530	1730	2330
24.	Gauhati	26°05'	91°43'	55	12th Mar. 1955	0530*	1130	1730*
25.	Gaya	24°45'	84°57'	119	19th Mar. 1937	0530	1730	2330
26.	Gopalpur	19°16'	84°53'	24	15th Feb. 1946	0530	1730	2330
27.	Gorakhpur	26°45'	83°22'	83	5th Jan. 1943	0530	1730	2330
28.	Gwalior	26°14'	78°15'	208	7th May 1938	0530	1130	1730
29.	Imphal/Tulihal	24°46'	93°54'	782	8th Mar. 1952	0530	1130	1730
30.	Jabalpur	23°10'	79°57'	402	30th July 1928	0530	1730	2330
31.	Jagdalpur	19°05'	82°02'	562	25th Mar. 1948	0530	1730	2330
32.	Jaipur/Sanganer	26°49'	75°48'	403	6th June 1953	0530	1730	2330
33.	Jamshedpur	22°49'	86°11'	144	23rd July 1942	0530	1730	2330
34.	Jharsuguda	21°55'	84°05'	240	1st May 1944	0530	1730	2330
35.	Jodhpur	26°18'	73°01'	229	15th Oct. 1934	0530*	1130	1730*
36.	Lucknow/Amausi	26°45'	80°53'	133	20th Nov. 1950	0530	1730	2330
37.	Madras/Minambakkam	13°00'	80°11'	29	8th Apr. 1926	0530*	1130	1730*
38.	Mangalore/Bajpe	12°55'	74°53'	104	25th May 1959	0530	1730	2330
39.	Minicoy	08°18'	73°00'	15	14th Apr. 1941	0530	1730*	2330
40.	Nagpur/Sonegaon	21°06'	79°03'	316	23rd Apr. 1943	0530*	1130	1730*
41.	New Delhi/Safdarjung	28°35'	77°12'	227	20th Oct. 1936	0530*	1130	1730*
42.	Poona	18°32'	73°51'	593	5th Jan. 1925	0530	1730	2330
43.	Port Blair	11°40'	92°43'	95	29th Oct. 1945	0530*	1130	1730*
44.	Raipur	21°14'	81°39'	308	15th July 1944	0530	1730	2330
45.	Raxaul	26°59'	84°51'	83	28th Oct. 1957	0530	1730	2330
46.	Siliguri/Baghdogra	26°38'	88°19'	141	7th June 1953	0530	1730	2330
47.	Srinagar	34°06'	74°48'	1603	1st August 1962	0530*	1730*	2330
48.	Tiruchchirappalli	10°46'	78°43'	96	22nd June 1936	0530	1730	2330
49.	Trivandrum	08°29'	76°57'	73	8th Dec. 1928	0530*	1130	1730*
50.	Udaipur	24°35'	73°42'	587	24th June 1947	0530	1730	2330
51.	Vengurla	15°52'	73°38'	8	22nd Nov. 1941	0530	1730	2330
52.	Veraval	20°54'	70°22'	17	13th Oct. 1941	0530	1730	2330
53.	Vijaywada/Gannavaram	16°32'	80°48'	32	8th Apr. 1942	0530	1730	2330
54.	Vishakhapatnam	17°43'	83°14'	10	24th Sep. 1928	0530*	1130	1730*

* Radiowind ascents.

@Radiosonde ascents followed by optical theodolite.

† Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	AGARTALA												AHMADABAD															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.8	1.4	134	30	1.2	0.3	207	30	2.0	1.3	164	30	1.5	1.0	260	30	2.7	1.5	274	30	2.1	1.7	270				
0.15 a. g. . .	27	4.9	2.9	151	30	3.5	1.2	191	27	5.3	3.4	184	30	5.2	4.1	268	25	3.6	2.9	287	30	3.4	2.8	261				
0.3 a. m. s. l. . .	27	5.3	3.0	164	30	3.6	1.4	211	27	5.8	3.7	198	30	6.0	5.2	274	25	4.1	3.3	280	30	4.6	3.9	265				
0.6 „ . . .	27	5.3	2.5	177	30	4.2	2.1	203	27	5.5	3.2	196	30	6.6	5.7	274	25	4.2	3.6	275	30	5.1	4.5	265				
0.9 „ . . .	26	5.4	2.1	177	30	4.6	2.1	196	27	5.2	2.9	189	30	6.5	4.8	264	24	4.3	3.6	256	30	5.2	4.6	269				
1.5 „ . . .	26	5.5	2.2	143	29	5.4	3.2	212	26	4.4	2.7	185	30	4.7	2.4	255	16	5.3	4.0	238	30	5.2	4.3	285				
2.1 „ . . .	22	6.3	3.2	155	27	6.0	4.1	131	23	4.7	3.0	171	30	5.1	1.3	246	11	4.9	3.0	210	30	5.4	3.3	294				
3.0 „ . . .	19	6.2	4.3	145	25	5.9	3.3	146	18	5.1	3.3	159	30	4.9	0.5	049	12	4.0	1.0	199	30	5.6	2.0	295				
3.6 „ . . .	13	4.5	2.7	148	19	4.6	2.2	125	6	4.0	2.7	125	30	5.2	0.9	015	9	2.5	0.2	208	30	5.1	1.8	301				
4.5 „ . . .	10	4.9	3.4	130	16	5.0	2.4	096	1	0.5	0.5	145	30	5.1	1.9	333	9	2.5	0.5	322	30	5.0	1.6	299				
5.4 „ . . .	6	4.5	3.3	123	12	5.0	2.7	069					30	5.0	1.5	335	9	3.8	1.1	343	30	5.1	2.1	314				
6.0 „ . . .	4	2.6	1.5	136	11	4.5	2.5	068					30	5.1	1.8	310	9	4.3	1.3	330	30	5.6	2.5	295				
7.2 „ . . .	4	4.5	2.1	136	7	4.5	3.3	077					30	6.0	2.4	299	8	4.8	3.3	235	29	5.2	3.0	294				
9.0 „ . . .	2	4.5	3.9	264	5	3.2	1.5	183					29	6.9	2.4	290	2	11.7	11.5	235	28	5.8	1.4	272				

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA											
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.7	1.4	220	30	0.9	0.5	103	30	1.9	0.2	100	30	0.7	0.2	094	30	0.5	0.3	057	30	0.9	0.4	099				
0.15 a. g. . .	27	5.9	4.1	228	29	5.4	0.7	240	29	4.4	0.8	297	30	4.5	0.7	325	29	5.8	0.6	115	29	5.0	2.0	095				
0.3 a. m. s. l. . .	27	6.3	4.4	236	29	5.3	0.7	242	29	4.8	0.8	299	30	4.5	0.7	330	29	6.2	0.5	318	29	2.3	1.1	090				
0.6 „ . . .	26	6.3	4.4	250	27	6.1	1.2	250	28	5.3	1.0	290	30	5.3	1.2	348	29	6.3	0.4	071	29	5.2	0.7	098				
1.9 „ . . .	25	5.6	3.9	257	27	6.5	1.4	269	25	5.9	1.7	286	30	5.9	1.2	354	28	6.4	0.9	289	29	4.6	0.6	360				
1.5 „ . . .	25	4.9	3.3	275	27	6.7	2.1	302	20	5.9	3.0	314	29	7.2	2.9	294	27	6.3	2.8	290	27	5.2	2.7	327				
2.1 „ . . .	21	4.9	2.4	303	27	6.9	2.2	320	13	5.6	4.5	311	29	7.8	3.2	302	23	6.7	5.3	296	27	5.7	3.3	332				
3.0 „ . . .	18	4.3	0.7	350	26	7.0	2.5	305	10	7.6	6.9	280	28	7.0	2.3	275	19	5.8	3.2	276	25	5.5	3.4	327				
3.6 „ . . .	1	5.0	5.0	200	26	6.9	2.2	245	7	7.4	6.8	251	28	7.1	2.0	247	4	6.1	2.4	215	18	3.8	2.2	323				
4.5 „ . . .					26	7.2	3.9	210	6	7.6	6.9	231	27	6.5	2.8	249	1	4.5	4.5	215	13	4.7	3.0	347				
5.4 „ . . .					25	7.2	4.2	211	5	6.7	5.6	228	27	6.3	2.8	222					9	3.9	0.7	042				
6.0 „ . . .					25	7.0	4.2	223	4	6.7	5.3	225	27	6.1	3.3	211					9	3.9	2.0	311				
7.2 „ . . .					25	6.1	3.6	217	4	7.6	6.7	239	26	6.8	4.0	220					2	5.7	4.7	283				
9.0 „ . . .					23	6.7	3.4	217	3	11.8	11.5	259	24	7.5	3.9	219					1	10.0	10.0	250				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	AMBALA												ANANTAPUR											
	1130				1730				2330				0530				1730				2330			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.1	0.6	119	30	1.3	0.2	356	30	0.9	0.1	358	30	2.3	2.0	261	30	3.9	3.1	284	30	4.0	3.7	264
0.15 a. g. . .	29	3.3	1.7	120	29	4.3	0.8	310	30	5.4	1.7	352	30	6.6	5.8	261	30	6.3	5.4	283	26	8.4	7.5	267
0.3 a. m. s. l. . .	29	1.6	1.0	120	29	2.5	0.5	297	30	2.3	0.5	345												
0.6 „ . . .	29	3.5	1.1	126	29	4.6	1.1	319	30	5.4	1.8	341	30	7.9	6.6	265	30	6.7	6.1	278	26	8.7	7.9	269
0.9 „ . . .	28	4.3	0.3	335	29	4.8	1.7	321	30	5.3	2.2	340	30	9.1	8.6	281	29	6.1	5.5	281	26	8.7	7.9	275
1.5 „ . . .	25	5.0	3.1	325	28	5.5	3.3	314	30	5.5	3.1	333	29	6.8	6.4	287	29	6.2	5.5	285	26	6.1	5.0	281
2.1 „ . . .	23	5.9	4.7	319	27	6.3	4.7	315	29	6.3	3.4	323	25	5.0	3.1	296	26	6.2	5.4	282	22	4.6	3.3	281
3.0 „ . . .	19	6.4	4.4	333	26	6.2	4.3	316	25	5.2	2.3	333	22	5.7	4.1	273	19	6.7	5.9	281	19	4.5	3.1	280
3.6 „ . . .	17	6.0	2.9	331	22	5.4	3.7	318	5	5.5	3.3	309	21	5.7	4.5	274	15	6.4	6.0	282	11	4.0	2.3	274
4.5 „ . . .	12	6.3	2.7	334	16	4.6	2.6	003	1	5.0	5.0	360	15	4.1	2.1	282	10	5.0	3.7	254	5	4.2	2.8	299
5.4 „ . . .	9	5.3	3.5	300	14	6.2	3.8	336	1	2.0	2.0	350	10	4.1	1.4	234	7	3.3	3.3	182	1	1.0	1.0	255
6.0 „ . . .	9	6.3	5.0	279	11	5.0	3.3	327					9	3.6	0.7	257	6	2.5	1.7	123	1	4.0	4.0	030
7.2 „ . . .	6	7.4	6.6	250	2	7.0	6.1	251					4	4.4	3.2	047	3	3.8	3.2	087				
9.0 „ . . .	2	15.0	13.3	246									2	5.3	4.8	079	3	5.5	5.4	099				

Station	ASANSOL												AURANGABAD/CHIKALTHAN											
	0530				1730				2330				0530				1730				2430			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.1	0.6	093	30	1.1	0.5	106	30	1.0	0.7	119	30	2.9	2.8	270	30	4.4	2.1	294	30	2.7	2.3	278
0.15 a. g. . .	26	4.9	0.4	319	30	4.9	2.3	120	28	5.8	1.3	146	30	6.9	5.3	280	30	6.3	3.3	301	30	7.5	4.6	295
0.3 a. m. s. l. . .	26	5.1	0.5	317	30	5.3	2.5	123	28	6.2	1.3	154												
0.6 „ . . .	26	6.4	1.7	329	30	6.6	2.3	133	28	7.3	1.6	177												
0.9 „ . . .	25	6.8	2.4	318	30	7.2	2.1	146	27	6.6	1.4	210	29	8.4	5.7	295	30	7.1	4.2	307	30	9.1	5.8	312
1.5 „ . . .	21	5.8	2.9	308	28	7.1	1.0	183	25	6.2	1.2	245	26	8.2	3.6	317	28	7.2	4.1	311	28	9.5	5.9	315
2.1 „ . . .	19	5.6	2.6	298	27	7.9	0.6	184	25	7.3	1.4	243	19	6.9	1.5	043	22	5.5	3.0	323	27	7.8	4.2	319
3.0 „ . . .	13	4.7	2.4	290	22	7.0	1.7	303	20	6.2	0.8	266	16	5.4	1.3	043	12	4.0	2.5	324	14	6.2	2.3	338
3.6 „ . . .	13	4.2	1.5	274	14	5.8	2.0	325	14	5.4	0.7	241	6	4.3	1.2	004	3	5.5	4.8	302	8	4.0	2.6	317
4.5 „ . . .	12	4.1	1.1	213	13	4.8	1.9	348	7	5.4	2.9	065					2	4.3	4.1	312	1	3.5	3.5	305
5.4 „ . . .	10	4.9	1.3	145	10	3.4	1.1	060	4	2.3	0.9	353									1	3.5	3.5	350
6.0 „ . . .	9	4.2	2.8	119	9	2.7	1.3	094	3	1.3	0.3	058												
7.2 „ . . .	7	4.1	2.7	151	8	4.3	2.0	081	1	4.5	4.5	210												
9.0 „ . . .	7	4.3	2.1	074	5	4.5	1.4	101																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	BAHRAICH												BANGALORE															
	0530				1130				1730				0530@				1130				1730@							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.7	0.6	089	30	1.3	0.7	107	30	0.8	0.1	081	30	3.3	3.2	277	30	3.5	3.3	270	30	3.3	2.4	272				
0.15 a. g.	26	4.7	0.8	124	29	3.8	1.4	114	29	4.7	0.7	306	23	5.9	5.5	278	30	4.9	4.7	270	27	4.6	3.8	272				
0.3 a. m. s. l.	26	5.3	1.1	128	29	3.9	1.4	118	29	4.8	0.6	307																
0.6 "	26	6.4	1.4	130	29	4.9	1.6	117	29	5.8	0.1	013																
0.9 "	25	6.6	1.0	122	29	5.7	1.2	120	28	6.1	0.3	155																
1.5 "	24	6.7	0.8	062	22	6.0	1.0	270	27	6.6	1.5	262	23	7.2	6.1	292	30	5.8	5.0	278	27	5.5	5.1	273				
2.1 "	23	2.7	1.5	077	18	6.0	2.2	273	26	7.0	0.8	294	21	5.5	3.8	298	18	4.4	2.4	275	24	6.8	6.4	280				
3.0 "	22	5.6	3.2	115	12	4.5	1.0	173	25	7.2	0.9	122	15	4.1	3.0	293	9	3.5	1.4	225	22	6.6	5.9	278				
3.6 "	18	5.0	3.2	132	11	5.0	2.6	159	22	6.1	2.4	132	14	5.3	3.3	284	9	4.3	2.5	256	19	6.1	5.5	272				
4.5 "	14	5.5	3.7	174	7	4.4	2.0	230	20	5.5	3.3	137	14	6.0	2.3	272	5	4.1	3.5	226	18	5.6	5.2	276				
5.4 "	12	5.2	3.8	200	7	7.7	5.7	212	18	6.7	2.9	183	13	4.9	0.6	352	5	3.1	1.5	128	15	3.8	2.8	288				
6.0 "	10	5.7	4.0	202	7	10.0	8.2	219	18	7.5	4.3	206	13	4.5	1.1	047	5	4.2	3.8	102	14	3.8	1.9	324				
7.2 "	7	7.1	5.0	221	6	12.3	10.3	237	18	7.9	5.5	231	10	4.7	3.5	101	3	6.3	6.3	101	13	3.8	2.1	062				
9.0 "	5	7.5	5.3	231	4	13.9	13.6	237	14	9.8	7.7	229	8	9.8	9.3	078	2	7.5	7.5	103	11	7.0	6.2	070				

Station	BANGALORE				BAREILLY				BEGAMPET																			
	2330				0530				1730				0530				1730				2330							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.9	2.8	269	30	0.8	0.4	103	30	0.8	0.3	059	30	2.0	1.8	279	30	2.8	2.1	316	30	1.2	0.9	276				
0.15 a. g.	23	6.7	6.3	257	28	4.0	1.0	089	28	3.3	0.7	026	30	6.5	5.4	280	30	4.6	3.5	321	29	5.5	2.9	304				
0.3 a. m. s. l.					28	3.7	1.1	078	28	3.1	0.7	026																
0.6 "					25	5.6	0.6	169	28	4.3	0.9	338	30	4.9	4.2	280	30	4.6	3.5	315	29	3.5	1.7	299				
0.9 "					25	6.1	0.7	254	28	5.1	1.3	316	30	8.5	6.5	293	30	5.6	4.4	302	29	6.8	3.8	309				
1.5 "	23	8.3	7.7	275	21	7.7	2.8	318	28	6.8	2.7	306	27	6.9	4.9	297	30	7.0	5.5	285	29	7.0	4.4	294				
2.1 "	21	6.1	5.4	280	21	8.1	3.0	333	27	7.6	3.6	313	27	6.4	4.2	294	29	8.0	6.1	283	28	7.2	5.2	290				
3.0 "	14	7.0	5.9	292	20	6.7	2.7	007	27	6.5	2.6	309	26	5.4	3.3	314	28	6.9	5.3	287	24	5.5	3.8	301				
3.6 "	10	5.2	4.6	279	17	6.0	1.9	076	27	6.2	0.6	351	19	5.1	3.1	295	25	6.3	5.3	295	21	4.7	2.7	310				
4.5 "	6	5.6	4.8	271	12	5.0	0.3	348	24	5.0	0.7	005	16	5.3	3.4	288	18	5.1	4.4	298	8	4.0	2.4	275				
5.4 "	3	7.2	6.7	266	8	4.2	3.1	212	19	4.9	1.3	232	10	5.3	3.3	294	10	4.2	3.3	329	3	4.0	3.6	280				
6.0 "	1	4.0	4.0	290	7	5.4	4.2	221	17	6.1	4.0	248	10	5.1	3.2	319	5	3.3	1.8	304	3	5.3	5.3	277				
7.2 "					3	7.2	6.3	234	9	9.5	8.7	249	6	4.8	3.4	067	4	3.4	1.5	083	2	3.0	1.6	323				
9.0 "					1	3.5	3.5	025	1	11.0	11.0	240	4	4.6	4.2	091	2	4.0	3.5	054								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR							
	0530				1730				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.2	1.3	109	30	2.0	0.6	100	30	2.2	1.7	267	30	3.0	2.0	284	30	2.2	1.5	274	30	2.8	1.9	259				
0.15 a. g.	29	5.5	1.3	135	28	4.8	0.3	105	27	6.6	4.4	280	27	6.1	3.7	291	27	7.1	3.7	302	25	5.1	3.2	272				
0.3 a. m. s. l.	29	6.3	1.1	122	28	5.5	0.8	071													25	5.9	3.6	274				
0.6 "	29	6.9	1.3	104	27	5.7	0.3	161	27	5.5	3.9	278	27	5.3	3.1	290	27	6.3	3.0	301	25	6.8	4.0	280				
0.9 "	25	6.8	0.7	096	26	5.9	0.8	248	24	7.4	4.9	291	27	6.4	4.0	302	26	7.3	4.0	313	25	6.2	3.1	299				
1.5 "	22	7.0	0.4	018	24	6.8	1.6	265	19	5.2	2.4	300	26	5.8	3.8	313	25	5.9	2.7	317	24	6.0	2.3	323				
2.1 "	21	7.6	0.3	360	23	7.7	1.3	291	18	5.2	1.7	334	23	5.2	4.0	334	24	5.2	2.6	329	21	5.8	1.6	323				
3.0 "	17	6.1	0.9	115	17	6.0	0.2	185	18	5.2	2.2	351	15	4.3	2.9	349	19	4.9	3.5	317	18	5.4	1.8	021				
3.6 "	13	4.7	0.7	232	13	5.2	0.8	348	18	5.1	1.5	350	11	4.5	3.7	316	11	4.5	2.1	297	12	5.0	1.5	055				
4.5 "	11	4.6	1.2	165	11	4.2	1.2	036	12	6.8	3.9	236	5	7.0	5.6	294	2	4.0	2.9	274	9	4.8	2.6	098				
5.4 "	7	4.3	1.1	148	7	3.0	0.3	163	9	7.1	5.5	220	3	8.2	6.0	253					6	5.3	4.5	111				
6.0 "	5	5.1	2.6	136	6	2.3	0.9	123	7	4.9	2.8	218	2	9.3	8.8	273					5	7.0	7.0	105				
7.2 "	2	5.5	5.2	087	1	2.0	2.0	230	5	4.8	2.7	272	1	10.5	10.5	260					2	7.0	6.1	115				
9.0 "									1	7.5	7.5	240									1	3.0	3.0	095				

Station	BHUBANESHWAR								BHUJ/RUDRAMATA												BIKANER							
	1730				2330				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.9	1.1	210	30	3.4	2.3	244	30	2.1	1.9	257	30	4.7	4.4	240	30	3.4	3.1	247	30	2.2	1.8	235				
0.15 a. g.	25	4.4	2.2	215	24	5.9	4.2	233	30	6.3	5.9	256	30	6.5	5.9	241	29	7.0	6.6	249	30	8.2	6.3	259				
0.3 a. m. s. l.	25	4.6	2.1	225	24	6.6	4.0	238	30	7.3	6.7	258	30	6.7	6.0	244	29	7.7	7.2	254	30	6.1	4.7	247				
0.6 "	25	4.5	2.3	237	24	7.4	4.1	246	30	8.3	7.6	259	30	6.5	6.0	251	29	7.6	6.7	255	30	9.5	7.1	258				
0.9 "	20	4.2	2.1	294	23	7.4	4.2	257	29	6.9	5.5	259	30	5.7	5.2	253	29	6.5	4.4	249	30	7.7	4.8	260				
1.5 "	18	5.1	1.7	310	20	6.6	3.0	283	29	5.5	2.1	235	26	5.0	3.1	268	27	4.9	0.5	159	30	5.3	1.2	272				
2.1 "	14	4.9	0.4	305	17	6.5	3.2	278	25	5.0	1.2	074	25	4.8	2.6	322	23	4.5	1.2	088	30	5.7	1.0	013				
3.0 "	6	6.8	2.5	057	6	5.0	3.8	004	23	6.5	4.4	028	23	6.0	3.1	011	22	6.0	3.4	020	26	6.1	4.1	032				
3.6 "	3	6.2	1.8	040	2	5.3	4.9	060	13	8.2	7.0	035	22	6.5	4.3	016	16	6.1	4.8	025	26	6.6	5.8	033				
4.5 "	2	2.5	2.5	118					7	6.9	5.7	017	18	6.2	5.1	013	8	8.4	7.9	025	24	6.4	4.5	016				
5.4 "									3	7.8	7.1	031	18	6.2	4.9	001	6	6.2	3.4	002	24	5.5	2.5	341				
6.0 "									3	6.0	5.7	006	14	7.2	5.4	331	5	5.3	3.9	309	23	6.7	4.1	300				
7.2 "									1	5.0	5.0	065	8	8.0	5.7	314	1	6.0	6.0	310	19	10.5	7.4	286				
9.0 "													5	7.2	6.4	265					14	9.7	7.4	287				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	BIKANER								BOMBAY/SANTA CRUZ															
	1730				2330				0530*				1130				1730*				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.5	0.3	273	30	1.6	1.3	215	30	1.5	1.1	252	30	2.9	1.6	268	30	4.2	3.9	286	30	2.3	1.7	276
0.15 a. g.	22	5.0	1.6	265	30	8.1	5.0	213	30	4.5	2.8	283	30	4.6	2.9	262	30	6.7	5.7	294	29	5.2	3.8	285
0.3 a. m. s. l.	30	4.2	1.0	268	30	6.9	4.1	212	30	4.6	2.8	277	30	4.7	3.4	262	30	6.3	5.7	288	29	5.4	4.2	289
0.6 "	30	5.7	1.4	266	30	7.7	4.5	222	30	4.6	3.0	276	30	5.5	3.6	270	30	6.1	5.3	286	29	5.4	3.5	287
0.9 "	30	5.7	1.3	268	30	6.5	3.0	257	30	5.1	2.9	265	28	5.7	2.9	268	30	6.1	5.0	283	26	5.0	3.2	293
1.5 "	30	4.9	1.0	279	30	4.7	1.7	280	30	5.7	2.7	253	14	5.6	1.1	160	30	5.3	2.8	267	21	4.8	1.5	295
2.1 "	30	5.4	1.2	317	30	4.2	1.6	354	30	4.9	2.2	258	10	6.5	2.7	160	30	5.1	3.3	242	13	4.6	0.3	056
3.0 "	24	5.4	3.3	350	26	5.9	4.2	018	30	5.1	2.1	243	7	4.9	2.5	202	30	4.8	2.6	242	11	5.1	2.6	111
3.6 "	19	5.3	3.5	003	11	7.4	5.4	005	30	5.6	1.4	261	3	5.7	4.4	168	30	4.7	3.1	258	8	3.7	3.0	140
4.5 "	16	5.9	4.5	002	1	12.0	12.0	030	30	5.5	1.7	269	3	5.7	2.6	242	30	4.5	1.8	245	4	4.1	3.0	210
5.4 "	14	7.2	5.5	343	1	14.0	14.0	020	30	5.5	2.0	256	3	3.2	2.2	224	30	4.3	2.2	267	4	4.1	3.9	230
6.0 "	12	8.3	6.6	326	1	10.0	10.0	040	30	4.5	1.4	259	3	2.8	2.1	183	29	3.9	2.0	255	4	3.6	1.0	227
7.2 "	7	8.9	7.7	300					30	4.7	1.0	040	3	5.0	2.4	097	29	4.3	1.2	080	2	4.3	4.2	052
9.0 "	3	18.7	18.6	273					30	5.3	3.0	062	1	7.5	7.5	085	28	7.1	3.8	070				

Station	CALCUTTA/DUM DUM								COCHIN/WILLINGDON†															
	0530*				1130				1730*				2330				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.4	0.7	130	30	1.7	0.8	123	29	2.1	1.3	150	30	1.4	1.0	127	30	0.5	0.5	088	30	3.2	2.8	289
0.15 a. g.	30	4.9	1.9	166	27	4.1	1.0	132	29	5.6	2.5	165	29	5.6	3.1	154	26	2.6	1.5	033	27	4.5	4.1	285
0.3 a. m. s. l.	30	6.2	2.4	168	27	4.4	1.2	121	29	5.9	2.9	173	29	6.3	3.3	171	26	3.1	2.3	334	27	4.9	4.6	291
0.6 "	30	7.5	2.7	176	26	5.5	2.0	133	29	6.5	2.9	173	29	6.8	3.4	171	26	4.9	4.5	315	27	5.7	5.4	295
0.9 "	30	7.2	1.9	172	25	5.7	1.7	135	29	7.7	3.2	160	29	7.1	3.1	167	26	5.7	5.3	301	26	5.9	5.6	294
1.5 "	30	7.7	2.1	154	17	5.7	0.9	091	29	7.8	2.6	157	28	6.6	1.8	170	25	6.1	5.6	288	26	5.8	5.3	289
2.1 "	30	7.6	1.3	159	10	6.5	1.4	058	29	7.7	2.4	162	24	7.0	2.5	140	24	6.0	4.9	288	25	5.4	4.3	279
3.0 "	30	8.1	2.1	154	4	5.3	4.3	080	29	7.6	2.3	155	15	6.8	3.2	118	13	4.5	2.9	278	19	4.7	3.3	287
3.6 "	30	7.9	3.5	156	3	6.7	5.8	093	29	7.6	2.4	147	4	9.9	8.4	115	12	4.7	3.9	268	12	3.9	1.7	266
4.5 "	30	7.5	4.4	150	2	9.7	9.0	096	29	7.3	3.6	134	3	9.0	4.6	162	9	4.3	3.7	257	6	4.0	2.2	099
5.4 "	30	7.3	4.7	146					29	6.8	4.3	133	3	11.2	8.7	145	2	2.0	1.5	123	3	3.3	2.8	118
6.0 "	30	7.4	5.7	139					29	6.7	4.4	145	2	7.5	7.2	118	2	5.0	4.8	107	2	3.3	1.8	095
7.2 "	30	8.0	6.2	138					29	7.3	4.3	142	2	10.5	9.7	124	1	8.5	8.5	085				
9.0 "	29	7.7	5.9	135					29	6.9	4.8	130	2	13.0	12.1	111	1	6.0	6.0	045				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	COCHIN/ WILLINGDON†				DEHRA DUN								DIBRUGARH/MOHANBARI																			
	2330				0530				1730				0530				1130				1730											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.9	0.4	348	30	0.4	0.3	047	30	0.7	0.3	253	30	0.5	0.2	067	30	0.9	0.5	053	30	0.7	0.4	037								
0.15 a. g.	22	2.7	2.1	322	23	1.5	0.6	054	26	2.0	0.1	237	24	3.7	2.4	060	29	2.4	1.0	040	30	2.7	1.7	050								
0.3 a. m. s. l.	22	3.2	2.9	312									24	3.8	2.0	053	29	2.5	1.9	010	30	2.8	1.3	064								
0.6 "	22	4.5	4.2	303									24	3.6	0.9	046	28	2.6	0.8	053	30	2.7	1.4	011								
0.9 "	22	5.7	5.3	299	23	1.5	0.3	119	25	2.2	0.6	274	23	3.2	0.3	064	26	3.0	0.6	072	30	2.7	0.7	107								
1.5 "	22	6.1	5.6	292	20	1.5	0.3	223	25	2.3	1.7	302	19	3.1	0.1	090	21	2.6	0.5	151	28	3.0	1.1	216								
2.1 "	18	6.3	5.2	288	18	2.5	1.7	300	23	3.3	2.1	305	18	3.7	1.6	215	18	2.4	1.5	182	28	3.3	2.2	200								
3.0 "	12	6.5	5.5	280	16	4.4	2.0	312	18	4.3	2.1	297	14	3.1	2.3	197	13	3.2	2.5	197	27	3.9	3.0	215								
3.6 "	2	2.7	0.5	238	11	5.0	1.1	058	17	5.0	1.0	323	13	3.8	3.1	195	10	4.4	3.2	195	22	3.5	2.5	210								
4.5 "	2	3.5	1.9	264	7	4.3	3.5	117	14	5.6	1.5	025	7	3.5	3.3	208	5	2.9	2.6	232	19	4.0	3.0	228								
5.4 "					4	2.3	2.0	210	10	2.7	0.3	025	6	3.8	3.0	230	4	3.1	2.7	220	16	4.3	3.5	221								
6.0 "					2	5.3	5.3	259	8	4.2	2.8	292	5	5.9	3.7	172	3	3.0	2.0	210	16	4.3	3.5	224								
7.2 "					1	16.5	16.5	245	7	10.1	9.5	267	4	3.1	1.6	210	2	7.5	7.5	242	11	3.4	2.1	212								
9.0 "													1	2.0	2.0	230					5	3.8	0.7	233								

Station	DIBRUGARH/ MOHANBARI				GADAG								GANGTOK																			
	2330				0530				1730				2330				0530				1730											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.4	0.1	035	30	3.3	2.9	254	30	4.0	3.3	256	30	3.6	3.3	269	30	0.7	0.5	031	30	0.3	0.2	052								
0.15 a. g.	30	3.4	0.1	045	29	7.2	6.4	257	30	7.8	7.0	258	30	8.2	7.8	264	17	2.5	2.3	017	17	1.9	0.9	093								
0.3 a. m. s. l.	30	3.3	0.9	054																												
0.6 "	30	2.4	1.2	087																												
0.9 "	30	2.0	0.7	099	29	8.4	7.3	279	30	7.7	7.1	262	30	9.0	8.5	270																
1.5 "	29	2.9	1.2	191	27	8.4	6.9	279	29	7.9	7.1	270	29	8.3	7.1	281																
2.1 "	29	3.5	1.9	219	25	7.0	4.4	272	26	6.7	5.4	291	29	6.5	4.3	290	17	1.7	1.2	356	17	2.0	1.0	190								
3.0 "	20	3.1	2.4	216	19	5.0	1.2	297	19	5.1	3.2	298	25	4.5	2.1	295	16	1.6	1.1	151	10	1.4	0.3	304								
3.6 "	13	4.6	4.1	200	17	4.9	1.9	180	14	6.1	5.2	280	21	4.6	3.0	273	15	2.3	1.2	146	9	2.1	0.5	186								
4.5 "	7	5.6	4.6	226	12	4.1	2.3	308	11	4.1	2.4	265	15	4.4	3.5	258	12	4.0	1.9	155	8	3.9	1.5	230								
5.4 "	4	3.0	2.9	228	11	3.0	2.2	280	8	3.3	1.6	254	11	3.0	2.4	270	7	4.6	2.9	235	5	4.6	3.4	246								
6.0 "	4	2.7	2.4	215	11	2.6	1.9	283	7	3.1	0.6	325	8	3.4	2.2	336	6	4.8	3.5	241	3	4.5	1.7	261								
7.2 "	1	4.0	4.0	260	10	2.9	1.4	029	5	3.9	3.5	033	3	2.5	2.4	063	6	2.7	0.9	266	3	2.7	1.8	040								
9.0 "					8	4.2	3.1	071	3	5.8	5.7	074					5	5.4	2.7	145	1	15.0	1.0	005								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	GAUHATI																GAYA											
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.3	0.7	143	30	2.0	1.0	013	30	0.4	0.2	251	30	1.0	0.7	204	30	1.7	0.7	080	30	2.4	1.1	013				
0.15 a. g.	30	2.9	1.0	109	29	3.4	2.0	032	30	2.9	0.7	254	30	3.1	1.3	234	28	4.8	0.9	183	27	4.2	1.3	359				
0.3 a. m. s. l.	30	3.1	0.9	105	29	3.8	1.9	045	30	3.0	0.8	270	30	3.1	1.0	259	28	5.1	0.9	178	27	4.3	1.3	357				
0.6 "	30	3.7	0.4	092	29	4.0	1.5	065	30	3.3	1.3	271	30	4.0	0.9	274	28	6.3	0.4	331	27	5.4	0.7	301				
0.9 "	30	3.6	0.5	133	29	4.2	1.2	097	30	3.5	1.1	264	29	4.4	0.8	280	27	6.8	0.6	285	27	5.9	0.8	250				
1.5 "	30	3.3	0.5	169	24	3.9	1.1	155	30	3.7	1.7	238	28	4.1	1.4	249	27	6.9	0.6	330	27	7.2	1.9	235				
2.1 "	30	2.6	1.1	173	23	3.5	1.4	158	30	4.2	2.1	218	26	3.3	1.8	206	20	6.9	1.1	290	25	7.0	1.6	240				
3.0 "	30	3.2	1.7	168	22	3.7	1.5	187	30	3.7	1.8	193	23	3.7	2.1	185	16	4.8	1.4	214	17	5.6	1.7	273				
3.6 "	30	4.1	2.2	183	21	3.9	1.7	205	30	3.5	1.6	202	21	3.9	2.3	185	14	4.3	2.4	215	12	4.0	2.0	290				
4.5 "	30	4.9	3.1	196	17	4.0	1.6	214	30	3.9	1.5	204	15	3.7	1.8	165	10	3.3	2.7	185	8	4.6	2.9	205				
5.4 "	27	4.5	2.3	200	14	3.7	1.9	204	30	3.8	2.6	217	10	3.6	1.5	175	9	2.7	1.5	180	7	4.3	2.2	195				
6.0 "	27	4.5	3.1	214	12	4.0	2.6	185	30	4.4	3.0	210	8	3.9	1.2	163	9	3.0	1.8	190	7	4.5	2.3	191				
7.2 "	27	4.7	2.4	209	10	3.9	2.4	192	30	4.3	2.2	197	4	3.0	0.9	190	1	4.5	4.5	240	4	4.7	4.2	197				
9.0 "	27	6.1	4.3	243	8	4.9	3.2	162	29	5.8	2.7	209	2	3.3	1.7	097					1	2.0	2.0	175				

Station	GAYA				GOPALPUR												GORAKHPUR											
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.5	0.5	100	30	1.7	1.2	225	30	3.5	2.8	200	30	2.2	1.8	220	30	1.2	0.4	086	30	1.5	0.9	098				
0.15 a. g.	26	4.7	0.5	115	28	4.8	3.1	247	28	5.9	4.3	205	23	5.5	4.5	224	29	5.5	0.7	070	29	5.0	1.2	329				
0.3 a. m. s. l.	26	5.0	0.3	137	28	5.4	3.3	256	28	5.3	3.4	218	23	5.0	3.9	226	29	6.2	0.7	067	29	5.3	2.4	112				
0.6 "	26	6.3	0.5	203	28	6.0	3.7	260	28	4.8	2.7	331	22	5.1	3.6	243	28	7.5	1.0	101	29	6.3	1.2	027				
0.9 "	26	6.8	1.0	210	27	6.1	3.5	276	26	4.4	2.2	274	21	5.2	2.9	260	27	7.8	1.4	083	29	7.1	0.9	115				
1.5 "	25	7.6	2.0	243	27	6.2	3.8	299	26	5.3	2.7	309	20	4.9	2.4	283	26	7.7	1.5	063	27	7.7	0.5	133				
2.1 "	19	5.8	2.8	283	26	6.5	3.9	297	23	5.8	2.3	239	18	4.7	2.1	297	24	7.8	1.5	055	25	6.9	0.1	085				
3.0 "	16	4.9	1.1	237	22	5.3	3.0	299	19	5.6	1.9	287	17	4.4	1.3	276	16	5.7	1.7	275	24	6.9	0.8	242				
3.6 "	1	4.0	4.0	290	20	5.2	1.9	293	16	5.2	0.8	262	6	3.5	1.6	005	13	4.5	1.7	193	22	6.6	1.2	207				
4.5 "					7	5.3	3.8	349	15	4.7	0.4	326	2	5.0	3.7	027	10	4.7	2.6	175	18	5.1	1.9	172				
5.4 "					7	4.6	2.4	104	13	5.0	0.5	009					9	3.9	1.5	194	16	4.6	3.2	212				
6.0 "					7	5.7	3.7	095	12	5.1	1.3	345					6	4.6	3.7	225	15	5.0	3.5	207				
7.2 "					4	8.2	7.9	062	6	4.6	2.3	072					4	6.3	5.5	229	12	5.7	3.6	229				
9.0 "					1	8.0	8.0	070	4	6.1	5.2	064					2	6.7	6.6	205	1	7.0	7.0	225				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level.

September, 1968 (Bhadra 10—Asvina 8, 1925 Saka)

Station	Gwalior																Imphal/TuliHal											
	0530				1130				1730				2330				0530				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.8	0.9	279	30	2.0	1.3	294	30	1.4	0.8	275	30	1.0	0.3	245	30	0.6	0.1	050	30	1.5	0.6	200				
0.15 a.g.	27	5.8	3.6	278	27	3.6	2.1	302	27	3.9	2.4	292	26	4.6	2.2	239	29	2.0	0.5	026	29	2.2	0.8	200				
0.3 a. m. s. l.	27	4.5	2.6	274	27	3.3	2.0	299	27	3.5	2.1	295	26	3.8	1.9	235												
0.6 "	25	7.3	4.9	288	27	4.5	2.7	306	27	5.1	2.8	298	25	4.8	2.4	269												
0.9 "	23	6.0	5.2	294	26	5.2	3.1	315	27	5.6	3.2	304	25	4.7	2.6	280	29	1.8	0.7	036	29	2.3	0.9	190				
1.5 "	22	5.0	3.4	313	21	5.4	3.2	314	26	6.5	3.6	318	22	4.7	3.6	309	25	3.1	0.8	118	29	3.3	1.0	130				
2.1 "	20	5.9	4.5	342	20	6.3	3.1	311	25	5.8	3.2	336	22	5.5	4.1	326	16	4.7	2.6	126	24	4.1	2.1	140				
3.0 "	18	5.9	4.3	322	17	6.2	3.7	327	24	6.0	3.7	316	20	6.0	4.8	332	11	5.4	3.9	130	17	3.7	2.3	140				
3.6 "	17	5.8	3.9	330	15	6.0	3.8	317	20	5.3	3.4	316	9	5.4	4.1	318	6	4.3	2.1	167	12	3.1	1.7	120				
4.5 "	14	6.5	3.7	304	15	6.5	4.1	287	17	5.9	4.8	307					5	4.1	3.7	130	10	2.7	1.3	140				
5.4 "	14	6.6	4.3	260	14	8.2	5.7	266	16	6.8	5.5	275					4	5.8	5.2	123	5	4.0	2.4	150				
6.0 "	13	7.5	5.7	257	14	9.3	6.6	255	15	8.0	6.5	262					4	5.1	4.8	117	3	3.8	3.8	130				
7.2 "	9	11.2	10.3	255	14	10.9	8.7	251	11	10.1	9.2	250					2	4.7	4.7	115	3	4.0	4.0	120				
9.0 "	4	14.5	14.5	242	8	9.5	7.8	243	6	10.0	9.3	242																

Station	Imphal/TuliHal								Jabalpur												JagdALpur											
	1730				2330				0530				1730				2330				0530											
Time in I.S.T.																																
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.5	0.9	237	30	0.6	0.3	192	30	0.5	0.3	256	30	1.2	0.6	226	30	5.7	0.2	244	30	0.4	0.4	200								
0.15 a.g.	30	3.7	1.1	211	28	2.1	0.4	059	27	4.3	3.3	257	26	4.3	2.5	318	27	4.3	1.2	274	27	3.7	2.3	240								
0.3 a. m. s. l.																																
0.6 "									27	4.5	3.1	276	26	4.6	2.6	321	27	4.6	1.3	294	27	2.1	1.2	234								
0.9 "	30	3.6	1.0	227	28	2.0	0.5	043	26	6.1	4.4	308	26	5.4	3.4	322	27	5.6	2.7	318	27	5.2	3.5	260								
1.5 "	30	3.6	1.7	154	28	3.0	1.1	159	20	6.1	4.4	333	24	7.0	5.2	326	25	6.0	3.6	335	24	6.3	4.4	300								
2.1 "	28	3.4	1.4	148	26	4.4	2.3	160	18	6.3	4.5	340	22	6.9	5.3	324	24	6.1	2.9	342	21	5.8	4.0	310								
3.0 "	23	3.7	1.7	149	18	5.4	3.2	149	15	5.7	3.9	345	14	5.5	4.0	315	16	4.3	1.3	318	18	4.6	3.1	317								
3.6 "	20	4.4	1.8	147	8	4.9	3.2	148	13	4.7	2.5	271	10	5.7	4.3	275	12	4.3	2.8	267	16	4.6	2.1	320								
4.5 "	13	3.8	1.8	111	3	3.2	0.7	184	10	7.1	3.8	251	7	6.4	3.2	263	3	9.5	8.8	254	14	4.1	1.5	320								
5.4 "	6	4.3	3.5	083	2	3.0	0.9	326	6	8.0	7.2	239	5	3.1	1.9	225	1	5.5	5.5	230	11	4.3	1.2	335								
6.0 "	3	4.5	4.4	098	2	2.5	1.3	011	6	6.7	6.2	257	5	2.2	1.2	195	1	4.0	4.0	200	10	3.3	0.8	040								
7.2 "	1	4.5	4.5	125					2	4.3	3.6	249	2	3.3	0.8	322	1	1.5	1.5	075	7	4.6	3.4	060								
9.0 "													1	8.0	8.0	275					3	7.5	7.2	114								

TABLE IV.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER												JAMSHEDPUR							
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.5	1.1	254	30	0.6	0.4	189	30	1.5	1.1	320	30	2.0	0.9	310	30	1.4	0.5	302	30	1.2	0.7	027				
0.15 a. g.	22	4.6	2.8	274	25	4.5	1.9	249	30	7.3	5.4	291	29	4.5	2.3	294	30	6.7	2.8	268	26	3.2	1.2	316				
0.3 a. m. s. l.																					26	3.3	1.0	311				
0.6 "	22	3.3	1.9	272	25	2.9	1.5	238	30	7.8	6.3	291	29	4.7	2.4	295	30	6.9	2.6	271	26	4.9	2.4	318				
0.9 "	22	5.4	3.4	279	24	5.7	2.9	263	29	8.7	6.6	293	29	5.6	3.3	320	30	6.8	2.1	288	22	5.5	3.6	313				
1.5 "	21	6.0	4.5	296	23	8.0	5.3	299	27	6.2	4.2	308	29	6.4	4.7	327	30	5.9	2.6	334	21	5.5	2.9	312				
2.1 "	20	7.0	5.0	303	19	7.5	4.6	311	23	6.3	4.1	343	27	6.7	4.8	335	29	6.7	4.3	341	16	5.0	4.1	330				
3.0 "	12	6.0	3.9	314	15	5.0	2.7	307	17	5.6	3.1	007	22	6.6	2.9	346	24	7.2	5.1	004	10	3.9	1.3	322				
3.6 "	9	4.7	3.1	317	5	4.8	3.5	302	10	5.3	3.3	010	18	5.4	3.5	340	20	6.5	4.5	003	6	4.0	0.8	307				
4.5 "	6	3.3	1.1	278									13	6.7	4.2	337	5	7.8	7.4	016	5	4.1	1.5	069				
5.4 "	6	3.7	1.5	292									8	8.1	6.3	315					1	3.0	3.0	045				
6.0 "	5	2.6	1.6	239									5	10.4	9.1	325					1	4.0	4.0	105				
7.2 "	4	3.1	0.9	010																								
9.0 "	2	2.7	2.7	097																								

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR															
	1730				0530				1730				2330				0530*				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.6	0.6	097	30	1.1	0.2	274	30	2.2	0.6	238	30	1.6	0.3	227	28	1.7	1.4	245	30	2.6	1.9	234				
0.15 a. g.	28	3.9	1.4	113	26	3.4	0.5	232	29	4.1	1.6	267	26	4.5	1.5	240	28	5.8	4.3	263	30	3.7	2.5	246				
0.3 a. m. s. l.	28	3.9	1.5	120	26	2.9	0.6	240	29	3.6	1.5	253	26	3.7	1.2	218	28	5.3	4.2	264	30	3.6	2.6	241				
0.6 "	28	4.9	1.5	123	26	5.2	1.6	332	29	4.6	1.6	285	26	5.7	2.1	262	28	5.7	4.5	254	29	4.6	3.8	237				
0.9 "	25	4.7	0.3	110	25	6.2	2.5	343	28	4.6	1.6	311	26	6.0	2.3	310	28	5.2	3.5	252	29	4.9	3.1	245				
1.5 "	21	4.9	1.3	332	23	6.5	2.8	352	28	5.5	2.3	348	24	5.2	2.5	342	28	4.9	0.9	210	26	5.3	0.3	237				
2.1 "	18	5.4	2.4	319	19	6.2	2.7	008	24	5.7	2.4	003	23	5.1	2.2	351	28	5.7	1.7	067	26	6.1	1.6	055				
3.0 "	13	6.2	2.1	312	14	5.0	1.3	330	21	4.6	2.1	027	17	4.5	0.3	019	28	7.8	6.7	031	23	6.0	3.2	040				
3.6 "	7	5.6	0.9	323	11	4.5	2.2	207	15	4.3	1.2	041	6	5.4	2.7	091	28	7.1	5.2	039	21	6.0	3.6	030				
4.5 "	3	5.8	3.1	319	9	4.7	1.8	176	14	5.0	1.0	021					27	7.8	5.4	021	19	5.9	3.2	003				
5.4 "	2	1.3	1.1	108	8	5.3	2.4	169	10	5.2	0.5	321					27	7.1	3.7	005	19	7.0	4.4	300				
6.0 "	1	2.0	2.0	090	6	4.3	2.7	132	10	4.3	0.4	290					27	7.8	3.4	331	17	7.5	5.6	286				
7.2 "					5	4.3	3.7	123	7	4.8	1.4	123					25	9.3	4.7	288	15	9.6	8.2	275				
9.0 "					2	3.0	2.0	125	1	0.5	0.5	360					24	9.5	7.9	260	10	12.0	10.1	263				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MADRAS/ MINAMBAKKAM											
	1730*				2330				0530				1730				2330				0530*											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	29	3.5	2.4	212	30	1.6	1.4	228	30	2.0	1.1	103	30	2.6	0.5	301	30	1.8	0.8	112	30	3.3	2.7	257								
0.15 a. g. .	29	4.3	1.9	216	30	8.7	7.1	223	28	5.3	1.0	205	28	4.4	1.3	311	30	6.0	0.8	116	30	6.5	5.5	257								
0.3 a. m. s. l. .	29	4.0	1.6	219	30	7.2	5.9	222	28	5.8	1.2	217	28	4.7	1.3	309	30	6.2	0.9	123	30	7.0	5.4	257								
0.6 „ .	29	5.2	2.4	210	30	8.8	6.7	229	27	7.2	0.7	218	28	5.9	1.3	311	30	6.7	0.7	107	30	8.0	6.8	265								
0.9 „ .	29	5.3	2.2	211	30	8.7	5.7	232	26	7.3	0.8	277	28	6.4	1.5	307	28	7.1	0.7	312	30	7.4	6.3	274								
1.5 „ .	29	4.7	0.8	232	30	6.5	2.0	233	23	5.6	2.1	306	24	7.1	2.5	310	28	7.5	1.7	304	30	6.2	4.9	288								
2.1 „ .	29	5.1	1.0	009	29	5.5	1.9	060	22	6.7	2.9	323	23	7.5	3.0	316	24	6.1	3.3	301	30	6.0	4.1	300								
3.0 „ .	29	5.9	2.3	027	29	6.9	4.9	033	12	5.1	2.3	271	19	7.2	3.6	301	16	4.4	1.2	298	30	6.1	4.4	290								
3.6 „ .	29	6.8	3.6	035	29	5.8	4.1	037	11	4.7	2.9	231	16	5.9	1.6	286	6	4.7	2.6	165	30	6.0	4.2	293								
4.5 „ .	29	6.4	3.1	011	11	8.6	7.4	303	9	6.1	4.6	214	13	5.7	2.8	257	1	6.5	6.5	175	30	5.9	3.5	283								
5.4 „ .	29	6.7	4.0	333	5	9.2	8.3	045	7	5.0	4.2	200	13	6.7	5.1	237					30	4.6	1.5	296								
6.0 „ .	29	6.8	3.3	301	5	9.5	8.6	020	5	6.3	6.1	195	13	8.0	6.4	241					30	4.5	1.3	313								
7.2 „ .	28	8.5	6.1	283	2	4.5	3.7	360	3	4.8	4.6	205	9	8.4	7.7	236					30	5.3	0.9	110								
9.0 „ .	27	8.4	6.9	266	1	5.5	5.5	085					7	11.9	11.1	239					28	6.5	5.3	089								
Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE																			
Time in I. S. T.	1130				1730*				2330				0530				1730				2330											
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D								
Surface .	30	2.8	2.1	280	30	3.5	2.6	150	30	3.3	2.7	192	30	1.1	0.7	093	30	3.3	3.0	289	30	1.0	0.2	293								
0.15 a. g. .	30	4.1	3.3	277	30	4.9	3.7	150	29	7.7	6.9	190	29	3.7	1.7	037	30	5.5	5.3	289	29	3.9	3.2	311								
0.3 a. m. s. l. .	30	4.2	3.5	278	30	4.5	3.1	165	29	8.3	7.2	194	29	3.7	1.4	346	30	5.7	5.5	291	29	4.1	3.5	309								
0.6 „ .	30	5.1	4.5	289	30	3.9	2.5	202	29	6.9	5.8	203	29	4.8	3.9	302	30	5.7	5.4	296	29	5.7	5.1	309								
0.9 „ .	30	5.7	4.9	294	30	3.9	2.4	255	28	5.5	4.4	217	29	5.5	4.9	294	28	5.6	5.3	301	29	6.1	5.6	308								
1.5 „ .	29	5.2	4.1	284	30	5.2	4.1	285	26	4.9	3.4	270	24	6.0	5.3	285	21	4.8	3.8	288	27	5.4	4.6	287								
2.1 „ .	28	5.6	4.1	276	30	6.5	5.4	290	24	5.9	4.6	290	18	5.0	2.9	255	18	3.8	2.1	256	23	5.8	3.9	267								
3.0 „ .	28	6.1	5.0	285	30	7.4	6.5	295	21	6.2	5.0	298	16	3.5	0.9	239	15	4.3	2.7	262	16	5.3	3.3	263								
3.6 „ .	26	6.3	5.3	284	30	6.7	5.7	290	16	5.7	4.5	305	12	4.1	2.2	254	13	5.2	3.9	260	9	5.1	2.4	262								
4.5 „ .	25	5.9	4.5	283	30	5.7	4.7	293	5	4.8	1.3	197	10	4.7	2.3	248	8	4.8	3.2	249	8	5.4	2.6	262								
5.4 „ .	23	4.5	2.3	281	30	4.6	2.9	300	1	4.0	4.0	060	9	4.5	1.9	252	7	4.7	0.8	195	6	4.8	1.7	253								
6.0 „ .	23	3.9	1.5	304	30	5.0	2.8	308					9	2.8	0.6	057	7	4.6	2.0	086	5	6.1	1.7	287								
7.2 „ .	19	4.3	0.6	350	29	4.6	1.0	020					6	3.8	3.4	074	6	5.0	3.5	080												
9.0 „ .	11	6.3	5.2	095	27	6.0	4.6	095					3	6.5	5.6	076	4	6.3	6.0	077												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	MINICOY												NAGPUR/SONEGAON											
	0530				1730*				2330				0530*				1130				1730*			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.																								
Surface.	30	2.8	2.6	294	30	2.5	2.1	294	30	2.7	2.4	304	30	1.3	1.0	311	30	2.9	2.0	302	30	2.1	1.4	316
0.15 a. g.	29	5.2	4.7	298	30	5.7	4.9	291	29	5.0	4.4	300	27	5.5	4.3	303	27	4.3	3.1	314	27	5.3	3.6	295
0.3 a. m. s. l.	29	5.5	5.0	300	30	5.8	5.5	297	29	5.1	4.6	300												
0.6 "	29	6.2	5.5	302	30	6.3	5.9	302	29	5.6	5.4	298	27	6.0	4.5	309	27	3.8	2.3	317	27	5.7	4.0	292
0.9 "	29	6.7	6.3	302	30	6.4	6.1	298	29	5.8	5.4	300	30	5.6	4.0	316	25	4.1	2.1	321	27	5.8	4.3	298
1.5 "	28	5.9	5.7	286	30	6.4	6.1	285	29	5.5	5.3	290	30	5.8	3.7	323	21	5.0	2.2	350	29	5.9	4.2	305
2.1 "	28	5.4	4.9	284	30	5.9	5.5	282	26	5.5	4.8	287	30	5.7	2.7	333	18	5.4	2.7	350	30	5.9	4.1	307
3.0 "	25	6.0	5.0	282	30	6.9	5.6	274	20	5.5	3.6	278	30	5.0	2.9	322	13	4.0	2.5	002	30	5.3	3.7	308
3.6 "	21	5.8	4.4	268	30	7.5	5.6	271	12	5.0	1.3	244	30	4.9	2.7	315	12	4.5	1.3	315	30	4.8	3.1	297
4.5 "	16	5.4	3.4	255	30	6.2	4.0	260	8	5.1	1.3	235	29	5.5	3.2	281	9	6.1	1.7	224	30	5.5	1.8	282
5.4 "	11	5.5	3.4	244	30	5.7	2.8	269	3	3.3	3.2	104	29	5.2	1.5	278	8	3.3	1.8	255	30	4.7	2.0	283
6.0 "	8	7.1	2.3	265	30	5.6	1.9	284	3	4.0	4.0	126	29	4.8	2.3	297	7	3.2	1.4	229	30	4.5	1.4	317
7.2 "	5	6.7	2.5	126	30	5.8	0.5	077					29	3.9	0.7	346	6	2.7	1.8	243	30	3.6	0.7	087
9.0 "	2	7.5	5.3	209	28	5.4	4.4	087					29	4.4	2.5	069	4	4.7	3.4	108	30	5.1	3.2	089

Station	NAGPUR/SONEGAON				NEW DELHI/SAFDARJUNG												POONA							
	2330				0530*				1130				1730*				2330				0530			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.																								
Surface.	30	0.8	0.4	272	30	1.9	0.7	279	30	3.7	1.6	301	30	2.4	1.1	352	30	1.5	0.1	087	30	0.4	0.4	270
0.15 a. g.	29	4.9	2.2	295	30	6.8	2.5	273	27	5.0	1.9	332	30	5.5	2.1	006	29	4.6	1.4	102	29	4.0	3.5	267
0.3 a. m. s. l.					30	6.3	1.6	273	27	4.6	2.1	333	30	5.0	2.0	015	29	4.0	0.8	240				
0.6 "	29	5.9	3.1	317	30	6.7	2.1	282	27	5.1	1.8	317	30	5.4	2.3	351	29	5.0	1.5	085	29	2.0	1.8	252
0.9 "	29	6.3	3.4	304	30	6.7	1.8	294	26	5.7	2.3	332	30	5.8	2.4	340	29	5.1	1.1	037	29	5.0	3.8	277
1.5 "	28	5.8	3.2	334	39	6.2	2.4	331	23	6.6	2.9	326	30	6.7	3.4	323	29	6.0	1.4	355	20	7.4	2.3	294
2.1 "	25	5.7	3.2	328	30	7.3	3.6	331	20	6.5	5.4	320	28	6.7	3.5	316	22	6.3	3.9	316	16	4.6	1.0	107
3.0 "	18	4.6	2.8	337	30	7.6	4.2	344	16	7.5	6.1	338	28	7.1	4.1	321	13	6.0	4.4	326	11	3.3	1.7	181
3.6 "	15	3.8	1.3	296	30	6.8	4.3	359	16	7.6	5.3	334	28	6.4	4.1	333	2	2.3	2.3	329	8	4.3	2.0	248
4.5 "	6	4.3	1.5	181	30	5.3	2.7	019	10	6.6	4.0	332	28	6.1	3.6	337					4	4.3	3.7	275
5.4 "	1	5.5	5.5	266	30	4.9	1.7	337	10	7.9	5.5	320	28	5.7	2.7	327					4	5.6	4.3	260
6.0 "					30	5.5	2.6	282	10	9.4	5.7	310	28	5.6	3.7	297					4	5.3	3.5	281
7.2 "					30	7.3	4.9	252	7	13.6	9.1	275	28	8.4	6.9	273					3	5.2	2.7	058
9.0 "					30	10.3	9.3	256	2	22.5	22.5	256	29	12.1	10.9	258					1	5.5	5.5	110

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level.

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	POONA								PORT BLAIR																							
	1730				2330				0530*				1130				1730*				2330											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.2	1.1	272	30	0.3	0.2	250	30	3.1	2.4	233	30	5.7	5.2	241	30	3.4	3.1	232	30	4.1	3.9	234								
0.15 a. g.	29	6.0	4.9	277	30	4.6	4.3	263	30	6.2	5.6	238	24	8.8	7.9	241	30	6.5	6.2	240	26	7.3	7.3	244								
0.3 a. m. s. l.									30	6.5	6.1	240	24	8.5	7.7	240	30	6.8	6.3	242	26	7.8	7.4	245								
0.6 "	29	3.5	3.0	277	30	2.1	2.0	250	29	8.3	7.5	246	24	9.7	8.7	246	30	8.9	8.3	248	26	9.5	8.5	252								
0.9 "	29	6.5	5.5	279	30	5.6	4.8	270	28	8.3	7.7	250	17	9.1	8.7	255	30	8.9	8.4	252	17	8.1	7.3	259								
1.5 "	23	6.2	4.9	285	25	7.5	5.1	290	28	8.0	7.0	255	10	6.0	5.5	265	30	7.8	7.3	261	11	4.8	4.0	264								
2.1 "	14	3.0	1.4	301	18	6.4	1.8	348	29	7.3	6.3	250	5	7.3	7.3	259	30	7.6	6.7	259	7	3.8	2.3	284								
3.0 "	8	3.3	0.8	138	12	4.5	2.4	110	29	7.0	5.6	258	1	10.0	10.0	265	30	6.8	5.0	258	3	3.3	2.9	078								
3.6 "	8	3.9	1.1	126	7	3.5	1.9	146	29	6.5	4.7	260					29	6.6	5.1	260												
4.5 "	4	4.7	4.1	238	3	3.8	3.8	242	29	6.5	4.5	264					29	6.3	4.7	253												
5.4 "	3	4.8	4.6	250	2	5.0	3.8	279	28	5.4	3.2	256					29	6.0	3.8	246												
6.0 "	3	4.2	3.6	261	2	4.5	2.7	290	27	4.8	2.9	231					29	5.7	3.1	241												
7.2 "	3	4.0	0.6	079					26	4.6	0.6	201					28	5.1	1.5	156												
9.0 "	2	6.5	5.3	086					22	7.5	5.3	081					24	7.4	5.8	085												

Station	RAIPUR												RAXAUL								SILIGURI/ BAGHDOGRA															
	0530				1730				2330				0530				1730				0530															
Time in I. S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.4	1.1	244	30	1.9	0.7	253	30	1.8	1.1	242	30	1.1	0.3	104	30	1.0	0.2	043	30	1.9	1.4	053												
0.15 a. g.	27	5.1	3.0	252	28	4.7	1.1	282	27	4.9	2.7	257	24	5.0	2.3	102	29	4.9	0.5	082	25	3.8	2.7	058												
0.3 a. m. s. l.													24	5.3	2.5	109	29	5.1	0.6	097	25	3.9	2.6	070												
0.6 "	27	5.9	3.2	285	28	5.3	1.5	281	27	5.4	2.6	275	24	6.0	3.1	115	29	5.9	1.4	139	25	4.1	3.0	087												
0.9 "	26	6.1	2.9	232	25	5.5	2.1	324	27	5.8	2.3	302	22	5.7	2.6	117	29	6.8	2.1	144	23	4.9	3.6	079												
1.5 "	25	6.3	3.2	336	23	6.4	3.9	315	25	5.8	2.5	341	22	5.6	3.1	106	26	6.4	1.9	148	18	4.6	3.6	086												
2.1 "	23	5.4	3.3	351	23	6.4	3.8	319	23	5.0	1.8	353	18	4.9	2.6	118	22	5.7	2.3	112	17	5.0	3.6	092												
3.0 "	19	4.6	2.3	334	20	5.2	1.6	300	20	4.3	0.9	351	15	4.7	2.6	129	16	6.0	1.1	181	15	5.4	3.4	095												
3.6 "	18	4.5	1.6	335	17	4.6	1.8	282	13	3.4	1.4	226	11	5.3	1.5	137	11	5.5	1.2	154	14	4.4	1.4	124												
4.5 "	15	4.7	2.2	310	12	3.6	1.2	237	3	2.8	1.2	066	8	4.6	0.9	175	9	5.4	0.9	172	11	5.1	1.3	226												
5.4 "	11	4.6	1.4	289	10	4.0	1.9	254	1	5.0	5.0	045	6	4.7	1.3	253	5	3.9	2.2	257	10	6.0	1.9	230												
6.0 "	7	4.0	1.8	314	10	3.3	0.9	258	1	5.5	5.5	070	4	4.3	1.5	166	4	4.4	3.3	243	8	6.1	0.8	199												
7.2 "	3	2.8	0.8	339	4	4.1	2.7	024					2	6.5	5.3	219					4	6.6	4.4	222												
9.0 "	1	2.5	2.5	015	1	5.5	5.5	095																												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS.

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	SILIGURI/BAGHDOGRA								SRINAGAR								TIRUCHCHIRAPPALLI							
	1730				2330				0530*				1730				0530				1730			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.0	0.5	062	30	1.8	1.3	038	26	0.4	0.2	146	23	0.9	0.4	169	30	4.1	4.0	272	30	4.7	2.2	225
0.15 a. g.	28	3.3	0.3	088	28	3.2	1.5	062	26	2.0	0.6	097	23	1.9	0.8	152	30	7.9	7.6	277	30	6.4	3.2	225
0.3 a. m. s. l.	28	3.4	0.5	103	28	3.3	1.6	085								30	9.5	9.2	277	30	6.6	3.5	226	
0.6 "	28	4.0	0.7	124	28	3.9	1.2	097								30	10.1	9.9	280	30	5.6	3.9	239	
0.9 "	28	3.9	0.9	131	27	4.5	1.3	096								30	8.7	8.3	282	30	5.6	4.3	246	
1.5 "	24	4.3	2.9	107	25	4.9	2.4	102								30	6.1	5.2	274	29	5.9	5.0	260	
2.1 "	19	4.1	3.3	115	16	4.7	3.3	103	26	2.3	0.9	036	23	1.9	0.9	164	30	4.7	3.5	279	26	6.2	5.0	275
3.0 "	14	4.6	3.1	110	9	4.4	3.2	109	26	2.3	0.3	308	23	2.5	0.5	163	30	5.4	3.7	281	20	6.3	5.2	285
3.6 "	12	4.9	1.8	135	2	4.3	3.5	295	25	2.4	0.7	090	23	3.0	1.0	186	30	5.7	4.1	275	16	5.5	3.7	293
4.5 "	7	6.8	1.4	223					25	3.4	0.4	073	23	3.5	1.7	266	26	6.2	4.0	275	12	5.6	2.8	283
5.1 "	4	6.6	3.0	273					26	3.8	1.7	265	23	4.7	1.5	246	23	5.5	2.2	269	11	5.8	2.3	265
6.0 "	4	6.8	1.2	278					26	5.7	2.4	241	23	6.3	4.5	261	17	5.1	1.1	120	9	6.3	0.5	020
7.2 "	3	7.7	2.4	223					26	9.2	7.4	272	23	10.3	9.3	263	14	4.7	2.8	103	7	3.9	1.9	069
9.0 "									24	17.7	14.6	256	23	19.2	18.4	255	8	7.7	7.5	082	2	6.3	4.5	102

Station	TIRUCHCHIRAPPALLI				TRIVANDRUM																UDAIPUR			
	2330				0530*				1130				1730*				2330				0530			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	3.5	2.7	249	30	1.3	1.1	346	30	2.4	2.2	307	30	3.9	3.4	299	30	1.7	1.3	321	30	0.3	0.2	297
0.15 a. g.	27	6.8	5.5	253	30	6.0	5.9	328	30	4.7	4.3	304	30	6.8	6.6	301	30	5.8	5.3	314	28	2.7	0.2	292
0.3 a. m. s. l.	27	7.1	5.8	251	30	6.2	5.9	323	30	5.2	4.8	304	30	7.1	6.8	299	30	6.5	6.0	312				
0.6 "	27	7.9	6.7	254	30	7.1	6.4	308	30	6.5	6.1	305	30	8.3	7.8	300	30	8.3	7.9	309				
0.9 "	26	7.8	7.0	256	30	7.9	7.5	301	27	7.4	7.0	306	30	8.0	7.6	299	28	8.6	8.3	309	28	3.5	2.6	295
1.5 "	25	7.1	6.2	269	30	8.9	8.6	295	15	8.1	7.4	303	30	8.1	7.2	296	26	8.5	8.1	301	22	3.7	1.1	289
2.1 "	23	5.3	3.8	273	30	7.6	7.2	290	6	6.3	3.8	300	30	8.0	6.8	290	24	8.2	7.7	287	21	5.1	1.0	060
3.0 "	23	5.7	3.5	284	30	7.9	6.6	279	2	3.0	1.9	169	30	7.4	6.5	279	17	6.7	5.4	286	19	6.2	1.9	073
3.6 "	15	6.2	3.0	294	30	7.1	5.7	270	1	4.5	4.5	145	30	7.5	6.2	275	10	6.1	5.1	281	18	5.6	1.3	065
4.5 "	9	6.8	2.2	293	30	5.8	3.3	260	1	3.0	3.0	125	30	6.4	4.7	276	6	6.0	4.1	331	15	5.2	2.5	018
5.4 "	3	5.8	1.7	331	30	5.1	1.7	288	1	3.0	3.0	360	30	6.1	2.7	281	2	3.3	3.0	131	11	4.0	2.8	338
6.0 "	2	6.5	1.2	341	30	5.6	1.3	269	1	5.0	5.0	095	30	5.4	2.1	310	1	3.5	3.5	045	11	5.2	3.4	315
7.2 "					30	4.8	1.6	079	1	6.0	6.0	115	30	4.8	1.7	030					8	6.3	5.6	288
9.0 "					30	7.1	5.8	095	1	6.0	6.0	080	30	6.5	4.9	088					5	9.9	9.1	280

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	UDAIPUR				VENGURLA				VERAVAL																			
	1730				2330				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.3	0.9	265	30	2.8	0.2	258	30	0.5	0.4	348	30	2.3	1.9	275	30	0.4	0.2	324	30	4.0	3.1	280				
0.15 a. g. . .	30	3.9	2.2	258	28	3.2	2.2	273	30	3.9	2.0	309	30	5.3	5.0	275	29	3.9	2.7	311	29	6.7	5.3	285				
0.3 a. m. s. l. . .									30	4.9	3.5	302	30	6.6	6.2	261	29	5.2	4.3	305	29	7.0	5.8	282				
0.6 " . . .									30	6.0	5.1	293	30	7.5	6.9	284	29	6.1	5.4	302	29	6.9	5.9	273				
1.9 " . . .	29	4.0	2.1	250	28	3.8	2.7	280	22	5.5	4.7	294	28	7.6	7.1	287	24	6.1	5.4	304	27	6.6	5.3	263				
1.5 " . . .	26	4.5	2.8	278	25	4.4	2.8	310	18	5.3	3.8	290	21	5.7	4.2	280	17	4.3	2.5	295	23	5.2	1.9	234				
2.1 " . . .	23	5.2	1.5	308	23	5.2	1.6	335	14	5.0	0.4	032	17	5.5	4.2	263	13	4.2	0.6	309	20	4.3	1.1	147				
3.0 " . . .	19	5.8	1.3	040	17	5.3	1.8	293	9	5.2	2.2	138	11	4.4	1.6	227	10	3.5	0.9	266	18	5.7	1.4	054				
3.6 " . . .	17	6.1	0.8	028	4	5.1	1.4	105	1	5.0	5.0	210	9	5.6	4.9	214	2	5.3	0.7	177	9	5.9	2.6	018				
4.5 " . . .	13	5.7	1.4	350	2	5.3	4.7	022					8	6.4	5.9	236					5	5.9	3.6	320				
5.4 " . . .	13	5.2	3.1	337									7	4.3	3.7	233					2	4.3	3.3	252				
6.0 " . . .	8	8.6	6.9	306									7	3.8	2.3	251					2	4.3	2.3	267				
7.2 " . . .	3	5.0	4.9	265									3	3.2	1.1	158					1	4.0	4.0	035				
9.0 " . . .	2	11.5	11.5	253																								

Station	VERAVAL				VIJAYWADA/GANNAVARAM				VISHAKHAPATNAM																			
	1730				2330				0530				1730				2330				0530*							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	6.0	5.9	271	30	4.4	4.0	281	30	1.9	1.6	272	30	3.2	2.0	310	30	1.9	1.1	223	30	2.4	2.2	293				
0.15 a. g. . .	30	6.3	6.2	273	30	6.8	6.2	282	30	5.4	4.5	263	29	4.6	2.7	307	29	5.4	3.2	221	30	5.7	4.9	298				
0.3 a. m. s. l. . .	30	6.9	6.5	270	30	7.2	6.5	280	30	7.0	5.7	267	29	4.9	3.0	302	29	5.9	3.4	230	30	5.6	4.8	288				
0.6 " . . .	28	6.9	6.5	271	29	7.0	6.3	275	30	8.7	7.0	272	29	5.4	4.2	301	29	5.6	3.3	261	30	6.2	5.1	257				
0.9 " . . .	28	5.9	4.8	274	29	6.3	5.0	268	28	8.7	7.2	280	29	6.1	5.2	297	29	5.8	4.1	282	30	6.2	4.8	257				
1.5 " . . .	24	4.7	1.9	270	28	4.9	1.3	237	28	7.6	6.4	295	28	8.0	7.0	295	26	7.6	6.1	288	30	6.2	4.1	274				
2.1 " . . .	23	4.6	1.0	308	24	4.9	1.2	069	27	7.4	6.0	297	26	9.0	7.9	289	26	8.2	7.0	292	30	6.0	4.6	294				
3.0 " . . .	23	5.1	1.7	344	21	5.4	2.0	043	21	5.8	4.9	301	23	7.4	6.4	292	22	7.4	6.1	304	30	5.4	4.1	303				
3.6 " . . .	23	5.9	3.3	356	16	6.3	2.8	020	15	5.3	3.7	311	21	6.3	5.0	291	15	6.0	4.9	311	30	4.8	3.7	305				
4.5 " . . .	21	4.9	2.3	357	11	5.1	3.2	027	12	5.5	2.4	304	19	5.4	4.4	296	11	4.9	3.8	320	30	4.7	2.3	312				
5.4 " . . .	19	4.1	2.2	343	2	2.5	2.1	329	9	5.1	1.8	281	16	3.6	2.1	314	6	3.7	1.9	031	29	4.5	0.9	302				
6.0 " . . .	19	4.0	2.4	346	2	2.5	1.9	265	8	6.3	2.2	351	15	3.3	1.5	356	5	4.7	3.3	044	29	4.4	0.8	009				
7.2 " . . .	18	4.5	2.4	003	1	4.5	4.5	010	7	5.3	2.1	076	13	4.0	2.3	040	1	5.5	5.5	040	29	4.7	1.7	065				
9.0 " . . .	11	6.5	2.4	091					7	7.6	6.9	087	8	8.0	6.7	091					29	7.3	5.5	095				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Station	VISHAKHAPATNAM											
	1130				1730*				2330			
Time in I. S. T.												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	3.1	2.5	239	30	3.2	2.3	278	30	1.5	1.1	244
0.15 a. g. . .	30	3.9	2.9	234	30	4.9	3.0	297	28	3.5	2.7	239
0.3 a. m. s. l. . .	30	3.8	3.0	240	30	5.1	3.1	287	28	4.0	3.2	248
0.6 " . . .	30	4.7	3.7	251	30	5.4	3.9	255	28	4.4	3.7	257
0.9 " . . .	27	4.9	3.5	271	30	5.8	4.0	263	28	4.8	3.8	268
1.5 " . . .	23	5.8	4.3	295	30	6.1	4.6	288	25	5.2	4.0	289
2.1 " . . .	19	6.3	4.8	313	30	6.0	4.3	294	24	5.3	3.9	292
3.0 " . . .	17	5.4	3.9	325	30	5.8	3.8	292	19	4.2	2.8	289
3.6 " . . .	15	5.2	4.1	329	30	4.8	2.6	280	12	4.4	2.2	317
4.5 " . . .	12	4.2	2.7	314	30	4.8	3.1	293	8	4.4	1.7	286
5.4 " . . .	8	5.4	2.4	329	29	4.4	2.0	283	6	4.6	0.1	007
6.0 " . . .	7	4.7	2.1	018	29	4.2	1.6	316	4	4.9	3.5	070
7.2 " . . .	4	4.9	2.9	054	29	4.8	1.7	039				
9.0 " . . .	4	6.3	3.8	046	29	5.9	5.0	067				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

[Winds above 9.0 km. above mean sea level

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D
	Shrinagar (Contd.) 0530 hr.*					1730 hr.			
27.0	2	8.7	2.0	152	10.5	6	9.5	9.1	083
					12.0	4	12.0	11.3	100
10.5	22	21.6	21.1	257	14.1	3	22.0	21.7	105
12.0	19	24.0	23.2	256	16.2	3	19.7	19.3	089
14.1	13	24.1	23.5	252	18.0	3	21.8	20.4	101
16.2	8	12.7	11.7	257	21.0	1	26.5	26.5	095
18.0	3	9.6	8.6	231		VISHAKHAPATNAM 0530 hr.*			
21.0	2	7.0	3.5	091	10.5	29	8.9	7.7	090
	TIRUCHIRAPPALLI 0530 hr.*				12.0	29	13.2	12.4	089
10.5	5	11.1	10.9	093	14.1	28	18.6	17.3	092
					16.2	26	22.1	22.0	091
10.5	1	13.5	13.5	085	18.0	19	17.1	16.6	094
12.0	1	18.5	18.5	085	21.0	13	15.4	15.0	087
	TRIVANDRUM 0530 hr.*				24.0	3	18.7	18.7	091
10.5	30	12.2	11.4	097		1130 hr.			
12.0	30	20.4	19.9	091	10.5	3	8.2	7.7	065
14.1	29	27.9	27.3	090	12.0	1	9.0	9.0	075
16.2	26	19.4	18.4	085	14.1	1	18.0	18.0	110
18.0	22	22.6	20.8	091	16.2	1	23.5	23.5	115
21.0	6	15.5	12.6	077	18.0	1	18.5	18.5	085
24.0	2	5.7	5.3	222	21.0	1	23.5	23.5	090
						1730 hr.*			
10.5	30	12.4	11.5	096	10.5	29	8.9	7.9	080
12.0	30	20.6	19.8	092	12.0	29	12.9	4.6	093
14.1	29	26.9	26.4	095	14.1	27	18.4	16.7	089
16.2	27	19.6	18.5	089	16.2	24	23.1	22.7	092
18.0	23	22.3	21.6	093	18.0	21	19.5	16.6	092
21.0	14	14.6	13.4	089	21.0	16	15.6	14.9	088
24.0	2	9.5	4.6	082	24.0	1	16.0	16.0	085
	UDAIPUR 0530 hr.								
10.5	4	13.6	11.1	275					
	VERAVAL 1730 hr.								
10.5	9	6.8	2.5	130					
12.0	4	6.4	4.6	108					
	VIJAYWADA/ GANNAVARAM 0530 hr.								
10.5	6	10.7	10.4	086					
12.0	5	14.3	14.2	099					
14.1	5	19.2	19.1	103					
16.2	5	18.5	18.4	089					
18.0	5	15.8	15.4	083					
21.0	2	17.0	16.2	091					

RADIOSONDE DATA

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For a detailed description of the instruments used, a reference may be made to the I.M.D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of station	Type of instrument used	Date of starting	Hours of routine observations in G.M.T. during the month	Remarks
1	Ahmadabad	Fan type	20th July 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October 1944	00 and 12	
3	Bangalore	Fan type	10th March 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July 1955	00 and 12	
7	Jodhpur	Clock type	17th April 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June 1946	00 and 12	
9	Minicoy	Fan type	12th May 1963	12	
10	Nagpur/Sonegaon	Fan type	1st October 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December 1943	00 and 12	
12	Port Blair	Fan type	4th December 1949	00 and 12	
13	Srinagar	Clock type	1st Aug. 1962	00 and 12	
14	Trivadrurn	Fan type	1st July 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 Hours G. M. T.

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Table with columns for Standard Pressure Surface (mb.), No. of obs., Ht. gpm., and Temperature °A (Mean, Max., Min., Dew point) for JODHPUR, MADRAS/MINAMBAKKAM, MINICOY, NAGPUR/SONEGAON, NEW DELHI/SAFDARJUNG, and PORT BLAIR.

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 Hours G. M. T.

September, 1963 (Bhadra 10—Asvina 8, 1885 Saka)

Standard Pressure Surface mb.	SRINAGAR Surf. Pr. (836 mb.)						TRIVANDRUM (1001 mb.)						VISHAKHAPATNAM (998 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A.				No. of Obs.	Ht. gpm.	Temperature °A.				No. of Obs.	Ht. gpm.	Temperature °A.			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	23	1588	298.5	303	287	285.7	30	064	300.9	302	298	296.9	30	041	302.5	305	299	298.5
1000	23	-004	..	..	..	..	30	072	..	..	..	..	30	025	..	..	..	..
900	23	937	..	..	..	..	30	997	293.4	296	291	289.5	30	960	297.0	300	293	291.8
850	23	1441	..	..	..	..	30	1490	290.8	293	289	286.8	30	1460	293.6	297	291	289.0
800	23	1973	295.8	303	285	280.4	30	2007	287.6	289	286	284.3	30	1983	290.4	295	288	286.1
700	23	3115	285.5	292	276	273.8	30	3128	282.5	287	281	276.9	30	3114	283.8	290	281	280.6
600	23	4387	279.8	283	269	267.9	30	4394	275.8	279	273	271.4	30	4388	276.9	283	273	273.4
500	23	5872	265.5	272	259	..	30	5848	267.8	271	265	..	29	5850	269.2	277	263	..
400	23	7539	254.7	265	246	..	30	7565	257.1	261	252	..	29	7581	258.6	262	253	..
300	22	9626	241.6	249	230	..	30	9674	242.1	246	237	..	29	9705	244.2	250	238	..
250	20	10895	235.5	240	222	..	30	10940	231.6	237	226	..	29	10984	234.1	241	227	..
200	19	12407	225.5	232	218	..	30	12419	220.0	228	213	..	29	12484	222.5	230	212	..
175	15	13288	220.2	227	211	..	29	13251	213.1	219	205	..	27	13338	216.3	224	210	..
150	15	14263	214.8	223	205	..	28	14213	205.8	213	199	..	27	14316	209.0	216	199	..
125	13	15410	209.8	217	201	..	27	15258	200.2	207	193	..	25	15400	205.0	210	197	..
100	9	16812	207.8	213	202	..	27	16585	197.1	205	189	..	24	16761	199.0	205	193	..
80	7	18021	211.8	219	205	..	23	17901	200.6	208	192	..	21	18070	201.6	210	193	..
70	6	18904	215.8	226	207	..	22	18704	204.0	214	197	..	21	18860	204.2	213	197	..
60							20	19608	208.8	218	201	..	18	19807	207.4	215	198	..
50							19	20734	214.3	224	207	..	18	20897	211.3	221	199	..
40							12	22150	218.0	224	209	..	6	22227	212.6	221	205	..
30																		
20																		
10																		

Notes: Number of observation refer to those of dynamic height.

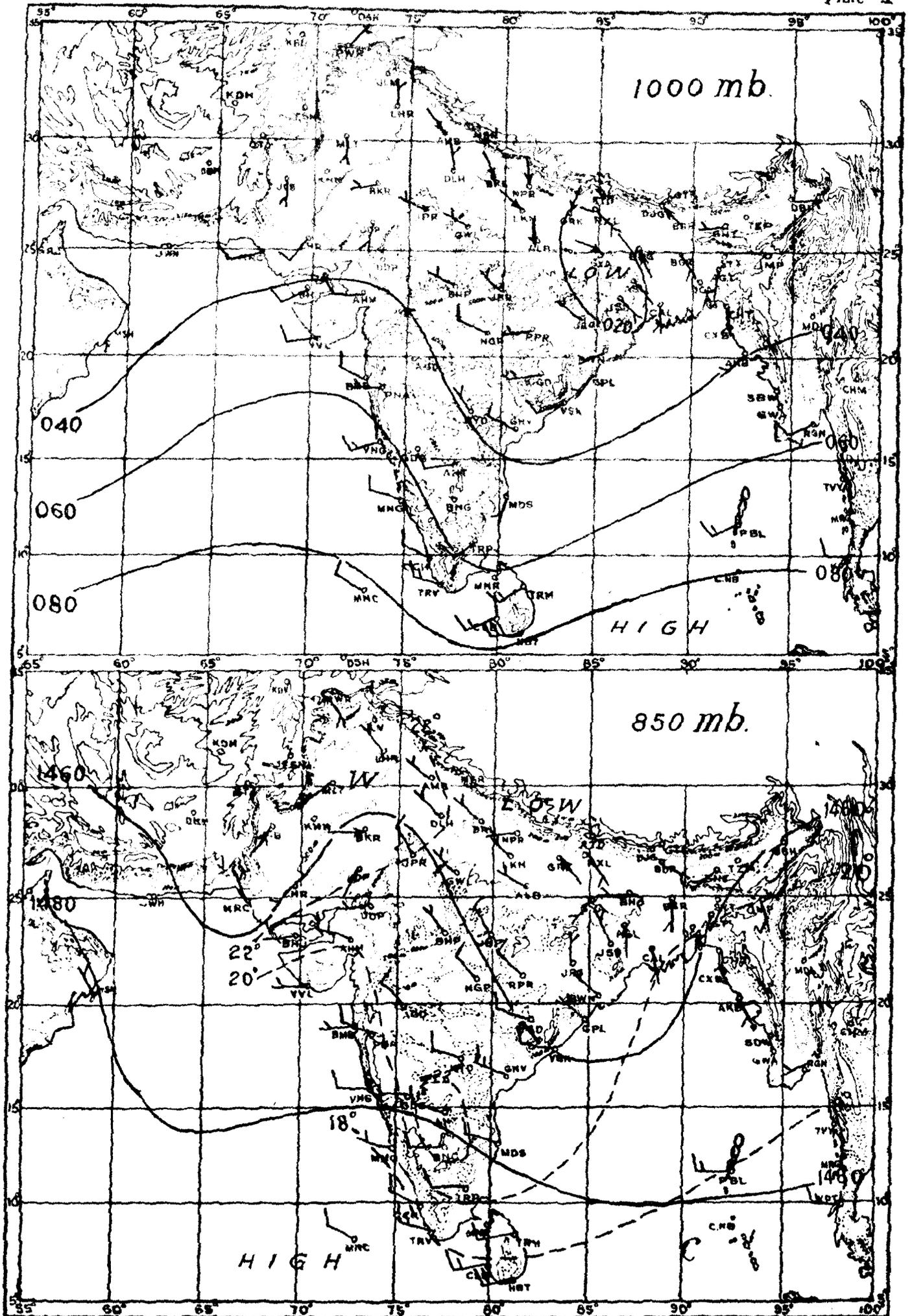
Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273°A.

Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS
 SEPTEMBER 1963

I Met. D

plate I



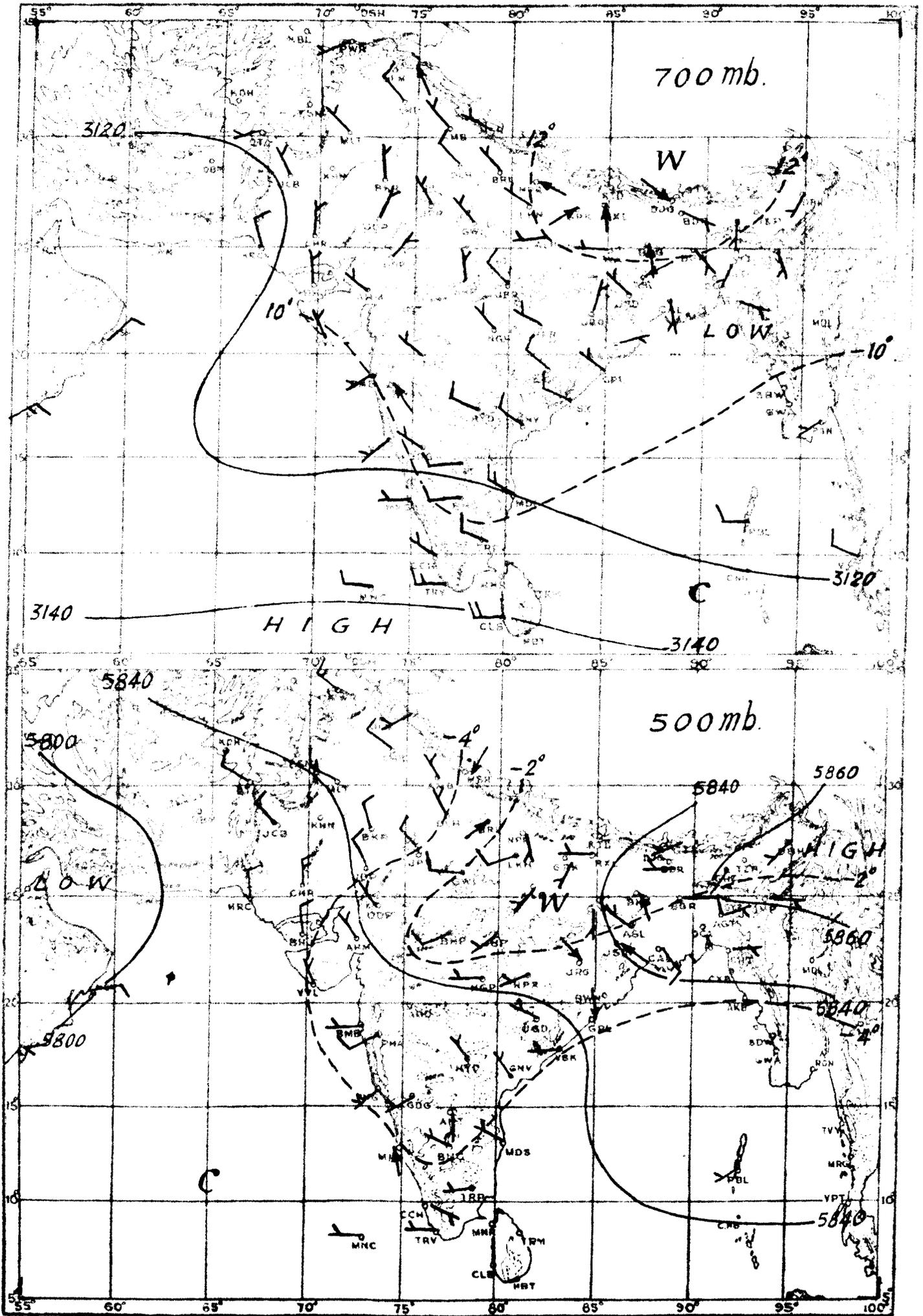
RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS
 SEPTEMBER 1963

I. Met. D.

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

October

Published by authority of the Government of India

Chief features:

- (1) Further withdrawal of the monsoon upto the south Peninsula by the middle of the month.
- (2) Good rainfall over the country outside Uttar Pradesh and extreme northwestern parts of the country.
- (3) Formation and movement of a cyclonic storm in the Arabian Sea and a severe cyclonic storm and two depressions in the Bay of Bengal.
- (4) A spell of very heavy rains leading to serious floods in Andhra Pradesh during the last week and
- (5) Movement of two western disturbances across northwest India.

A low pressure area which formed over the north and adjoining central Bay of Bengal towards the end of last month moved northwestwards and lay over north Orissa on the evening of 1st. Later it moved northwards, weakened and became unimportant by 4th. Under its influence, there was good rainfall activity in northeast India during the first four days of the month. Monghyr recorded 13 cm of rain on 2nd and Jamui 10 cm on 4th.

Another low pressure area moving from the east intensified and concentrated into a depression over the Gulf of Martaban and neighbourhood with centre about 200 kms southsouthwest of Rangoon on the morning of 4th. Moving northwestward, it further intensified into a deep depression by 6th morning when it lay centred about 250 kms southeast of Calcutta. Thereafter, it recurved northeastwards and crossed the East Pakistan coast during the night of 6-7th. Continuing to move northeastwards, it weakened into a low pressure area by 8th and filled up over Assam by the next day. Under its influence heavy rains occurred at a number of places in the Bay Islands and Assam. Some of the noteworthy amounts of rainfall recorded were : Kondul 10 cm on 6th, Silchar 16 cm, Agartala 13 cm, Haflong and Port Blair 10 cm each and Imphal 9 cm on 8th and Cherrapunji 15 cm on 9th. According to press reports, the depression accompanied by heavy rains lashed several sub-divisions of Tripura including Agartala and caused inundation of low lying areas and disruption of telecommunication and air traffic services. Thirteen persons were also reported to have been killed and three lakh people were affected by the floods.

A trough of low pressure developed over the east central Arabian Sea off the Kanara coast on 7th and persisted there till the middle of the second week. An upper air low formed over the central parts of the Bay of Bengal on 8th and moved westwards across the Peninsula into the east central Arabian Sea on 12th. It intensified into a depression by the morning of 13th with centre about 300 km west of Vengurla. Moving slowly in a northerly direction, it further intensified into a cyclonic storm of small extent by the next morning with centre near Lat. 18.0°N and Long. 69.0°E. Continuing to move in a northerly direction it lay centred about 100 kms west of Porbandar on the morning of 16th. Thereafter, it moved northwestwards, weakened into a depression by the same evening and became unimportant over northeast Arabian Sea by 18th. In association with the above developments, fairly well distributed rainfall with a few heavy showers occurred over the Peninsula during the second week. The active rainfall belt shifted to Maharashtra and Gujarat States and also to south Rajasthan later. Some of the heavy rainfalls recorded were : Ramagundam 7 cm on 7th, Belgaum 7 cm on 8th, Madras 10 cm on 9th, Vellore 11 cm, Kallakuruchi 9 cm, Calicut and Kakinada 8 cm each and Vishakhapatnam, Kalingapatam and Masulipatam 7 cm each on 11th, Honavar and Raichur 8 cm each on 12th, Kodaikanal 7 cm on 15th and Malegaon 7 cm on 17th.

The monsoon which had withdrawn upto Gujarat State, north Madhya Pradesh and east Uttar Pradesh by 23rd September further withdrew in slow stages from northeast India and north Peninsula during the first fortnight of October and the withdrawal was completed by 18th. Thereafter, it remained confined to the south Peninsula.

A low pressure area which developed over the southeast Bay of Bengal intensified into a depression by the evening of 18th, with centre near Lat. 9.5°N and long. 91.5°E . Moving in a westerly direction, it further intensified into a cyclonic storm by 20th morning and into a severe cyclonic storm by the same evening and crossed the Coromondal coast near Cuddalore during the afternoon of 21st. Thereafter, it moved northwestwards and weakened into a depression by the same evening. Later it recurved northeastwards and emerged into the northwest and adjoining west central Bay of Bengal near Gopalpur by 26th. Then it rapidly intensified into a severe cyclonic storm of small extent with a core of hurricane winds and was centred that morning about 100 kms east of Gopalpur. Later it moved eastwards, crossed the Burma coast north of Akyab during the night of 27-28th and weakened rapidly into a low pressure area over Burma on 28th. Under its influence there was a spell of heavy rains over the Peninsula and also in parts of northeast India. Some of the noteworthy amounts of rainfall recorded were : Nagapattinam 24 cm, Nellore 10 cm and Cuddalore 9 cm on 21st, Vedaranyam 14 cm, Vishakhapatnam, 13 cm, Bangalore and Ongole 12 cm each, Mysore and Gopalpur 11 cm each and Ootacamund, Merara and Tiruppattur 9 cm each on 22nd, Gopalpur and Puri 16 cm each, Punalur, Kakinada and Sambalpur 13 cm each and Mangalore and Vishakhapatnam 10 cm each on 23rd, Cherapunji and Daltonganj 16 cm each, Hazaribagh 15 cm, Jamui 14 cm, Gopalpur 13 cm, Malda, Dumka and Sabour 12 cm each, Haslong Vishakhapatnam and Alleppey 11 cm each on 24th. Silchar 14 cm, Agartala 13 cm, Aijal 12 cm. Kailashahar 11 cm and Bolargir 10 cm on 25th and Puri 12 cm on 26th. According to press reports, the strong winds and heavy rains associated with the severe cyclonic storm caused serious disruption of telecommunication, rail and air traffic services in the Madras State. The heavy rains also led to serious floods and caused disruption of traffic and damage to standing crops in Andhra Pradesh and Orissa.

Under the influence of a low pressure wave from the east, a depression developed over the southeast Bay of Bengal and adjoining Bay Islands area on the morning of 24th with centre near Lat. 10.5°N and Long. 92.0°E . Moving initially northwards and later northeastwards, it crossed the south Arakan coast by 26th morning. Thereafter, it weakened rapidly. In association with it, a spell of moderate showers occurred in the Bay Islands on 24th and 25th.

Two western disturbances affected the northwestern parts of the country during the month. The first disturbance was quite feeble and moved eastwards across the extreme north of the country during the period 7th to 9th, causing a few showers in the Western Himalayas. The other western disturbance moving eastwards across the Western Himalayas towards the end of the month caused a few light showers in parts of northwest India.

The rainfall for the month was in large excess in Orissa, Bihar State Saurashtra and Kutch, Marathwada, coastal Andhra Pradesh, Telangana and north Interior Mysore, in moderate excess in Assam, Vidarbha and coastal and south Interior Mysore, in slight excess in the Bay Islands, Rajasthan and the Rayalaseema and normal in Gangetic West Bengal, east Madhya Pradesh, Madhya Maharashtra and Madras State. It was in slight defect in west Madhya Pradesh in moderate defect in Sub-Himalayan West Bengal, Gujarat Region, the Konkan, Kerala and the Arabian Sea Islands and in large defect in Uttar Pradesh and Jammu and Kashmir. There was no rain in the Punjab(I). Data for Himachal Pradesh are not available.

The mean maximum temperature was above normal in the Punjab (I), and below normal in Sub-Himalayan West Bengal. It was normal over the rest of the country outside Himachal Pradesh. The mean minimum temperature was above normal in west Uttar Pradesh, the Punjab (I) and Rajasthan and normal over the rest of the country outside Himachal Pradesh.

The mean relative humidity in the morning was above normal in Bihar Plateau, west Uttar Pradesh Telangana and Interior Mysore and normal over the rest of the country outside Himachal Pradesh.

The mean cloud amount in the morning was in excess in Sub-Himalayan West Bengal, Bihar State, Uttar Pradesh, east Rajasthan, and north Interior Mysore and below normal in the Punjab(I) and Jammu and Kashmir. It was normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I.S.T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I.S.T. of the date given in the succeeding column.

Page No.	Station	Hour	Column	For	Read
<u>OCTOBER 1963</u>					
<u>Table II</u>					
540	Dibrugarh (Mohanbari)		3	+1.0	-1.0
540	Dibrugarh (Mohanbari)		20(b)	1	16
541	Bolangir		20(c)	not clear	11
542	Aligarh		9	2,6	26
542	Mainpuri		9	2,3	23
542	Ambala		12	22.1	-22.1
542	Mahajan		2	(b) 37.5	(h) 37.5
542	Mahajan		6	(b) 18.6	(h) 18.6
542	Foot note			(b) Mean of 29 days	(h) Mean of 23 days
543	Naliya		11	56.6	56.8
545	Bidar		23	blank	0
545	Bellary		11	87.0	187.0
546	Bangalore		12	+11.6	+111.6
546	Foot note		-	(o) Mean of 30 days	(a) Mean of 30 days
547	Foot note		-	Data not available.	* Data not available.

<u>Table III</u>					
548	Kondul	0830	5	-	8
549	Jalpaiguri	1730	11	Blank	72
550	Bankura	0830	28	0	1
550	Burdwan	1730	4	1008.5	1008.6
550	Calcutta (Dum Dum)	0230	27	27	17
551	Hazari bagh	0830	12	+1	+12
553	Gorakhpur (P.B.O)	0530	9	20.	20.3
553	Gorakhpur (P.B.O)	1130	26 & 27	4 and 0	2 and 4
553	Varanasi (Babatpur)	0830	17	3	0
553	Dehra Dun	0830	7	22.9	22.0
553	Dehra Dun	2330	4	1011.	1011.4
553	Aligarh	0830	19	Blank	2
553	Aligarh	0830	24	2	4
553	Aligarh	0830	27	8	3
554	Foot note	-	-	Observations for 30 days	**Observations for 30 days.
555	New Delhi (Safdarjung)	2330	26	,	1
555	Leh	0830	23	1	11
555	Leh	1730	23	11	1
555	Mahajan	1730	24	11	10
555	Mahajan	1730	27	2	3
555	Foot note	-	-	(o) Mean of 30 days.	Delete.
556	Jodhpur	0830	22	Blank	0
558	Sidhi	1730	8	2.4	21.4
558	Jagdalpur	0530	27	28	26
558	Jagdalpur	1730	28	2	0
558	Foot note	-	-	(b) Mean of 29 days.	Delete

Page No.	Station	Hour	Column	For	Read
559	Keshod	1130	28	0	1
560	Veraval	0530	10	23.7	22.7
561	Nander	1730	27	1	7
561	Kalingapatnam	0830	14	+0.8	-0.7
561	Vishakhapatnam	0530	26	Blank	1
562	Bhadrachalam	0830	14	1.2	+1.2
562	Hyderabad (Begumpet)	1130	28	0	1
563	Atirampatnam	0830	28	0	1
564	Bangalore	1730	22	Blank	2
566	Ootacamund	1730	8	1.36	13.6
567	Sonepur	0830	15	3.1	3.2
567	Pokhara	0830	21	1(e)	2
567	Nuwakot	0830	9	18.5	18.3

Page No.	Station	Hour IST.	Level Km	Element	For	Read
573	Bahraich	1730	2.1	n	20	29
573	Bangalore	2330	4.5	V	5.3	5.8
573	Bangalore	2330	4.5	v	5.8	5.3
574	Bhopal	0530	9.0	V	15.2	14.2
574	Bhopal	1730	2.1	n	81	31
577	Gauhati	2330	6.0	v	Blank	6.8
578	Column of Ht. in lower half of page : After 3.6 read the levels as 4.5 and 5.4					
580	Madras Name of station be corrected Madras/Minambakkam.					
586	Begampet	0530	18.0	V	14.3	14.0
586	Calcutta	2330	-	Ht.	330	2330
587	Gopalpur	-	-	-	Opalpur	Gopalpur
587	Gopalpur	0530	14.1	n	Blank	2
587	New Delhi	1730	16.2	v	5.7	15.7
587	Poona	1730	10.5	v	9.6	6.0
590	Allahabad	0530	125 m.	Max.	299	209
591	Jodhpur	0530	150 m.	Max.	228	218
591	Madras	0530	Surface	Td	297.1	297.0
591	Nagpur	0530	-	Surf. Pr.	972	975
591	Srinagar	0530	175 m.	Ht. gpm.	10007	13007
593	Allahabad	1730	250 m.	Max.	248	240
594	Minicoy	1730	80 mb	Max.	200	209
594	Nagpur	1730	150 m.	Min.	191	199

...3

Page No.	Station	Hour	Column	For	Read
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NOVEMBER 1963.

Text Portion:

598	4th paragraph 5th line			and	and
598	5th paragraph 4th line			appreciable	appreciably.

Table II

600	Fort Blair		13	30.4	33.4
600	Pasighat		17	8.1	8.4
600	North Lakhimpur		27;28	0; 0	2;2
600	Kaileshahar		26	Blank	0
600	Barrackpore (Aerodrome)		9	25	26
601	Dumaneishar		28	Blank	0
601	Muzaffarpur		20(a)	1	0
601	Purnea		29	Blank	0
602	Fathankot		8	0.8	8.0
602	Chandigarh		2	27.1	27.8
602	Ambala		21	Blank	0
602	Falam (Aerodrome)		9	2	24
603	Qazigund		8	0.1	-0.1
603	Banihal		8	0.4	-0.4
603	Barmer		19	+1.9	+1.9 (A)
603	Ajmer		16	+0.	+0.6
603	Tonk		28	0	1
603	Sheopur		10	24	2.4
603	Sheopur		12	-10.0	+10.0
604	Baroda		19	2.1	-2.1
604	Foot note			(p)Mean or total for 29 days.	(b)Mean or total for 29 days.
605	Aurangabad		29	Blank	0
605	Foot note			(b) Totr	(b) Total or
607	Nainital		6	5.	5,7

Table III

609	Dibrugarh (Mohanbari)	0230	7	18.8	13.8
609	Dibrugarh (Mohanbari)	0530	25	1	0
609	-do-	1130	26	0	1
609	North Lakhimpur	1730	18	4	14
610	Goalpara	0830	26	0	2
610	Goalpara	1730	26	3	0
610	Gauhati	0830	14	-0.2	-0.7
610	Gauhati (Bhorjor)	0830	15	0.7	2.7
610	Haflong	1730	17	1	0
610	Silchar (Kumbhirgram)	1730	10	1.0	21.0
610	Silchar	0830	18	1	15
610	Silchar	1730	13	1.5	1.8
610	Silchar	1730	20	1	0
610	Imphal (Tulihal)	0530	18	12	1
610	-do-	0830	12	-9	+9
610	-do-	0830	18	28	12
610	-do-	0830	20	0	2
610	-do-	1130	18	20	23
610	-do-	1130	20 & 28	2 & 0	0 & 1
610	-do-	2330	20	0	2

Page No.	Station	Hour	Column	For	Read
610	Kailashahar	0530	20	2	0
610	-do-	0830	20	0	1
610	-do-	1730	20	1	0
610	Agartala	0230	5	1011.6	1010.6
611	Krishnanagar	1730	4	10165	1012.6
611	Barrackpore (Aerodrome)	0830	12	+	+ 2
611	Sandheads	1730	10	23.2	23.5
612	Dumka	1730	23	9	0
612	Ranchi Aerodrome	1130	13	2.6	2.5
612	Jamshedpur (I.B.O)	2330	28	Blank	0
613	Motihari	-	1	Motihari*	delete asterisk
613	Motihari	1730	9	18.5	18.9
613	-do-	1730	11	30	80
613	Patna (Aerodrome)	2330	3	,"	52
613	-do-	2330	14	1	delete one
613	Bhagalpur	1130	17	2	0
613	Sabaur	1730	5	1018.2	1008.2
613	Lucknow (Amausi)	1730	5	999.7	997.7
613	-do-	1730	26	8	4
614	Kanpur	1730	10	1.80	18.0
614	Kanpur (Aerodrome)	0530	8	1	15.9
614	-do-	0530	9	4.6	14.6
614	Najibabad	1730	5	983.7	982.9
615	Agra	1730	4	1012.5	1012.4
615	Ludhiana	1730	25	' Not clear	4
616	Srinagar	1130	21	blank	3
618	Kota (Aerodrome)	2330	2	2330	*2330
618	-do-	2330	8	7.0	17.0
618	Kota	0830	2	*0830	delete asterisk
620	Jagdarpur	1730	3	353	553
620	Baroda Aerodrome	1730	6	0	—
620	Baroda	0530	3	38	34
620	Surat	2330	5	10.2.0	1012.0
620	Bhuj (Rudramata)	0830	4	1016.9	1015.3
620	-do-	0830	9	31.9	13.9
621	Bombay (Santa Cruz)	0830	24	1	0
621	Vengurla	1130	10	20.0	22.0
622	Bir	1730	23	Blank	0
623	Amraoti	0830	17	1	0
623	Akola Aerodrome	1730	27	3	8
623	Akola	0830	12	+1.0	+10
623	Chanda	0830	12	+1.1	+11
624	Arogyavaram	1730	7	24.4	24.2
624	Madras (Minambakkam)	0530	9	25.5	22.5
624	Vellore	0830	14	+2.9	+2.0
624	Cuddalore	0530	13	5.1	5.7
625	Honavar	0830	14	+1.0	+1.9
626	Belgaum	0830	4	1014.0	1014.6
626	Gadag	1730	7	21.8	27.8
626	Hassan	0830	7	20.2	20.1
626	Bangalore	0830	5	912.	912.8
626	Fort Cochin	0830	21	0	10

Page No.	Station	Hour	Column	For	Read
626	Fort Cochin	0830	22	13	3
626	Cochin Naval Air Station	1730	9	23.1	23.7
626	-do-	0830	21	Blank	8
626	Alleppey	1730	26	12	22
627	Trivandrum	1730	10	38.9	28.9
627	Lokpal	0830	9	11.1	-11.1
627	Pachmarhi	0830	4	1554.4	1554.2
628	Kodaikanal	0830	6	+0.2	+1.2
628	Konar	0830	18	29*	Mark should be
		1730		28*	in col. 19
628	Rangerh	0830	10	17.3	17.8
628	Punasa	0830	22	Blank	1
629	Taplejung	0830	19	0	0
629	-do-	1130	19	1	1
629	-do-	1730	19	1	1

* Estimated

Page No.	Station	Hour	Level (Km.)	Element	For	Read
633	Aurangabad	0530	5.4	V	9.4	5.4
636	Cochin	Add				
		mark †	after name of station.			
636	Cochin	0530	3.0	D	207	107
640	Jharsuguda	1730	6.0	v	1.45	14.5
642	Minicoy	1130	0.3	D	078	098
643	Port Blair	0530	-	Hour	0530	0530*
643	Raipur	2330	0.9	n, V, v, D	30, 4.3, 1.7, 120	30, 3.3, 1.1, 100
643	Raipur	2330	1.5	n, V, v, D	Blank	30, 3.3, 0.8, 037
643	Raipur	2330	2.1	n, V, v, D	Blank	30, 4.2, 2.2, 019
643	Raipur	2330	3.0	n, V, v, D	30, 3.3, 1.1, 100	29, 4.9, 3.2, 348
643	Raipur	2330	3.5	n, V, v, D	30, 3.3, 0.8, 037	14, 7.1, 5.9, 310
643	Raipur	2330	4.5	n, V, v, D	30, 4.2, 2.2, 019	2, 4.3, 4.1, 327
643	Raipur	2330	5.4	n, V, v, D	29, 4.9, 3.2, 343	Blank
643	Raipur	2330	6.0	n, V, v, D	14, 7.1, 5.9, 310	Blank
643	Raipur	2330	7.2	n, V, v, D	2, 4.3, 4.1, 327	Blank
644	Tiruchirappalli	0530	3.6	V	3.8	6.3
645	Udaipur	1730	4.5	D	385	285
645	Udaipur	1730	5.0	D	395	305
647	Gadag	0530	4.1	D	259	243
647	Jodhpur	1130	-	Time	1130*	1130
648	Mangalore	0530	10.5	D	224	264
648	New Delhi	1730	6.2	V	32.4	23.4
648	Port Blair	0530	-	Time	0530	0530*
651	Jodhpur	0530	-	Surf. Pr.	991	998
653	Bangalore	1730	500	Td.	283.1	283.7
			mb.			
653	Gauhati	1730	100	Mean	103.5	203.5
			mb.			
654	Minicoy	1730	800	Max.	29	291
			mb.			
654	New Delhi	1730	300	mb Mean	212.4	205.4
655	Trivandrum	1730	500	Mean	267.0	267.9
			mb.			

Page No.	Station	Hour	Column	For	Read
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DECEMBER 1963

Table I-Sub-division:

659	17. Gujarat Region	-	7	35	37
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Table II

660	Maya Bander	-	10	9.2	79.2
660	Fort Blair	-	5	23	2,3
660	Dibrugarh (Mohanbari)	-	11	19.9	9.9
660	-do-	-	12	6.1	-6.1
660	-do-	-	19	+0	0
660	Tura	-	11	0	0.1
660	Silchar	-	7	+0.2	+1.2
660	Barrackpore (Aerodrome)	-	9	25,25	25,26
661	Bhubaneswar	-	19	+0.5	+0.4
661	Sub-division	-	1	Uttar Pradesh	Uttar Pradesh(West)
661	Meerut	-	22,23,28	Blank	0, 0, 0
662	Srinagar	-	12	+49.9	+49.0
663	Kota	-	16	+0.5	-0.5
663	Hoshangabad	-	23	1	0
663	Indore	-	17	40.1	10.1
663	Rajpur (Jhabua)	-	23	0	1
663	Chhindwara	-	23	1	0
663	Seoni	-	23	1	0
663	Khandwa	-	24	0	1
663	Mandla	-	23,24	1,0	0,2
663	Raigarh	-	24	1	0
663	Kanker	-	20(b)	9	0
663	-do-	-	23	1	0
663	-do-	-	24	8	0
663	Jagdalspur	-	23	0	5
663	Deesa	-	17	5.0	9.0
663	Ahmadabad	-	15	1	0
663	-do-	-	16	0.1	-0.1
663	Dohad	-	24	0	1
663	Vallabha Vidyanagar	-	24	0	1
663	Baroda	-	23	0	1
663	Mandvi	-	28	1	0
663	Surendranagar	-	16	..	0
664	Porbender Aerodrome	-	28	Blank	0
664	Jeur	-	17	9.7	9.8
664	Sholapur	-	19	-0.4	-0.5
664	Parbhani	-	18	4.3	4.7
664	Nagpur (Sonagaon)	-	12	-11.0	-11.9
664	Kakinada	-	5	10	16
665	Belgaum	-	1	Belgaum (Sara)	Belgaum (Samra)
666	Bangalore	-	12	-3.6	+3.6
666	-do-	-	23	Blank	0
666	Trivandrum	-	2	20.8	30.8
666	Dalhousie	-	24	0	5
666	Kalimpong	-	4	27.3	27.8
666	Cherrapunji	-	9	26	21
668	Amini	-	11	224.3	424.3

Page	Station	Hour	Column	For	Read
	<u>Table III</u>				
669	Gohpur	1730	9	1.2	15.2
669	Jorhat (Aerodrome)	0530	20	Blank	1
669	Goalpara	0830	18	15	16
671	Asansol	0530	15	0.	0.7
671	Asansol	1130	17	1	0
671	Snanti Niketan	0830	19	11	12
671	Purulia	0830	12	+ 9	+ 2
671	-do-	0830	18	3	30
671	-do-	1730	18	4	14
671	Bankura	0830	9	14.5	12.1
671	Bankura	1730	18	Blank	0
671	Burdwan	1730	10	16.4	16.6
671	Barrackpore (Aerodrome)	2330	27	Blank	25
671	Sagar Island	1730	15	7.8	8.7
671	Sandheads	0530	25	Blank	2
671	-do-	0830	9	16.4	16.7
671	Beripada	0830	11	60	66
671	Charsuguda	0530	8	11.	11.7
671	Keonjharagarh	1730	8	17.	17.6
672	Angul	0830	11	73	70
672	Chandbali	1730	8	18.	18.4
672	Bhubaneswar	1730	28	Blank	0
672	Copalpur	1730	22	7	6
672	Koraput	0830	12	+3	--
672	-do-	0830	28	0	--
672	-do-	1730	28	0	--
672	Daltonganj	0830	12	-2.6	-26
672	Bhubanbad	0830&	28	6;6	0;0
		1730			
672	Ranchi	1730	22	9	0
672	-do-	1730	27	21	26
672	Ranchi Aerodrome	1730	27	9	0
672	Jamshedpur	0830	14	+0.3	-0.3
672	-do-	0830	27	1	5
672	-do-	1730	27	15	16
672	Jamshedpur (P.B.O)	1130	17	2	0
672	-do-	1730	21	9	0
672	Chandbasa	0830	18	Blank	18
672	-do-	1730	9	11.2	11.9
672	Kotihari	1730	7	20.9	20.0
672	-do-	1730	11	61	71
672	Forbesganj	1730	26	0	1
673	Chagalpur	1130	23	3	0
673	Gorakhpur	0830	23	Blank	1
673	Gorakhpur (P.B.O)	1130	27	9	0
673	Kenpur	1730	27	Blank	14
674	Allahabad (Bamhaurli)	0230	8	16.0	10.0
674	Varanasi (Babatpur)	1130	17	4	0
674	Aligarh	1730	11	84	48
675	Fathankot	0830	7	19.7	9.7
675	Balwara (Aerodrome)	0830	7	7.1	7.6
675	Bhatinda	0830	20	9	0
675	Bissar	1730	17	0	1

Page No.	Station	Hour	Column	For	Read
675	Palam (Aerodrome)	0830	17	1	0
675	-do-	1130	17	0	1
676	Jammu (Aerodrome)	1130	11	59	54
677	Jaisalmer	1730	8	15.5	17.5
677	Jaipur (Sanganer)	2330	19	Blank	4
677	Bhilwara	1730	5	966.0	966.4
677	Kota (Aerodrome)	0830	4	1018.3	1018.8
677	-do-	2330	4	1018.3	1017.3
677	Erinpura (Jawai Dam)	0830	9	1.3	11.3
677	Chambal (Rawat Bhatta Dam)	0830	9	19.8	9.8
677	Udaipur	1730	9	0.4	10.4
677	-do-	2330	8	11.4	11.2
677	-do-	2330	9	19.2	9.2
677	Gwalior	0530	5	992.2	992.3
677	Foot note	-	-	(a) Mean of 30 days.	Delete.
678	Chhindwara	1730	8	14.9	14.0
678	-do-	1730	27	5	2
678	Sidhi	0830	23	1	3
678	Jabalpur	1130	17	Blank	0
678	Jabalpur	1730	4 to 28	Not printed /21.9; 15.1; 9.2; 11.7; 45; —;	1014.2, 969.7; —; /2.2; —; 1.5; 0; 0; 15; 5; 6; 0; 0; 0; 1; 3; 0; 16; 0
678	Jabalpur	2330	4 to 28	Not printed	1017.4; 971.4; — 13.0; 10.9; 8.7; 11 75; —; 0.8; —; 0.5 0; 0; 6; 0; 1; 0; 4; 11 0; 0; 0; 25; 0
679	Deesa	1730	23	5	0
679	Ahmadabad	1730	5	1006.4	1006.9
679	-do-	2330	19	0	2
679	Dohad	1730	19	3	0
679	Broach	1730	25	0	1
679	Surat	1730	26	0	4
679	Surat	2330	19	0	6
680	Kandla (Aerodrome)	0830	24	2	0
680	-do-	1730	11	7	27
680	Dwarka	0830	6	-0.1	-1.0
680	Porbander Aerodrome	0830	11	05	55
680	Keshod	1730	20	Blank	8
681	Bombay	0830	3	-	11
681	Bhira	0830	19	4	2
681	-do-	1730	12	-5	delete
681	Harnai	0830	12	Blank	-5
681	Ratnagiri	0830	5	1006.8	1009.8
681	-do-	1730	5	1009.6	1006.6
681	-do-	1730	12	+4	delete
681	Devgarh	0830	12	Blank	+4
681	Vengurla	0530	17	1	0
681	Marmugao	1730	21	9	0
681	Malegaon	0830	21	01	0

Page No.	Station	Hour	Column	For	Read
681	Malegaon	1730	11	40	30
681	-do-	1730	21	10	16
681	Ahmadnagar	1730	17	0	4
681	Poona (Aerodrome)	0530	7	16.0	16.2
681	Poona	0530	2	9530	0530
681	Jeur	0830	27	1	17
681	Sholapur	0830	23	Blank	1
681	-do-	2330	18	21	31
681	Miraj	0830	21	1	10
681	-do-	1730	4	1019.7	1009.7
681	-do-	1730	21	3	13
681	Kolhapur	1130	17	12	11
681	-do-	1730	4	1000.3	1009.3
681	-do-	1730	22	2	1
681	Foot note	-	-	Not given.	*Observatory started from 15.12.1963. Hence observations for 17 days,
682	Aurangabad	0830	5	971.3	951.3
682	Akola Aerodrome	1730	5	997.3	977.3
682	Chanda	1730	13	.7	2.7
682	Gannavaram	0530	2	0550	0530
683	Mahbubnagar	0830	4	1015.1	1015.7
683	Kurnool	0830	6	Blank	-0.1
683	-do-	0830	14	Blank	+2.1
683	Anantapur	0830	6	Blank	-0.3
683	-do-	1130	6	-0.3	delete
683	Cuddapah	0830	5	1007.7	1000.7
683	-do-	0830	6	Blank	0
683	-do-	1730	6	0	delete
683	Arogyavaram	0830	7	0.0	20.0
683	-do-	1730	7	3.3	23.3
683	Madras (Minambakkam)	0530	4	1011.7	1012.7
683	-do-	1730	22	Not clear	2
684	Vellore	0830	24	3	2
684	Vellore	2330	11	80	86
684	Mettur Dam R.S.	0830	11	30	80
684	Cuddalore	2330	10	23.3	25.3
684	Salem	1730	7	29.2	27.2
684	-do-	2330	9	13.1	18.1
684	Vedaranniyam	1730	17	2	0
684	Atirampattinam	1730	17	0	2
684	Madurai	0830	18	23	28
684	-do-	1730	17	26	0
684	Madurai Aerodrome	0530	18	Not clear	23
684	-do-	1130	11	62	67
685	Honavar	1730	5	1000.8	1006.8
685	Mangalore Bajpe	1730	4	1019.4	1009.4
687	Pachmarhi	0830	10	3	9.3
687	Ootacamund	1730	4	1503.5	1503.0
687	Katmandu	1130	4	1527.0	1527.9
687	Konar	0830, 1730	16 and 19	0.0 and 0.1	0.* 0*. & 0*;1* Read this date as estimated. ...19

Page No.	Station	Hour	Column	For	Read
688	Khudi Bazar	1730	9	11.9	11.0
688	Dadeldhura	1730	20	9	0
688	Sallyana	1730	8	10.9	10.0
688	Butwal	0830	8	12.7	13.7
688	Katmandu	0830	3	Blank	1324
688	Wallungchung Gola	1730	8	(a) 1.9	(a) 1.0
688	Bhojpur	0830	10	10.6	10.0
688	Gangtok	0830	13	3.3	3.6
689	Minicoy (February)	0830	5	1012.4	1012.3
689	Minicoy (July)	-	1	Minicoy	delete
689	AMini (July)	2330	17	Blank	8
689	Foot note	-	-	Not given	(a) Mean of 30 days *0530, 1130 and 2330 hours obser- vations started from 17.5.1963. Data available for less than 15 days hence no means.
690	Minicoy (July)	2330	18	19	16
690	Amini (August)	0830	8	25.	25.9
690	-do-	1130	2	1330	1130
690	Amini (October)	0530	2	1530	0530
690	Amini (November)	1130	3	2	delete
690	Minicoy (November)	0530	3	,,	2
690	Amini (December)	1730	8	25.8	24.8
690	Minicoy (December)	0530	6	+0.4	delete
690	-do-	0830	6	Blank	+0.4

Page No.	Station	Month	Col.	For	Read
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Table IIIA - Extreme values.

692	Car Nicobar	May	N	952	1952
692	Majbat	Apr	N	16.6	16.5
693	-do-	Aug	N	1663	1963
696	Dehri	Mar	R	0.4	30.4
696	Gaya	Mar	X	941	1941
696	-do-	Mar	N	945	1945
696	-do-	Apr	X	938	1938
696	-do-	Apr	N	886	1886
696	-do-	Apr	R	193	1933
696	Kheri	Feb	N	195	1957
696	-do-	Feb	R	196	1961
696	-do-	Apr	R	4.	4.6
696	Bahraich	Jan	X	196	1946
696	-do-	Jan.	N	936	1936
696	-do-	Jan	R	193	1953
696	-do-	Feb	X	52	1952
696	-do-	Feb	R	905	1905
696	-do-	May	N	944	1944

TABLE I—DIVISIONAL AND SUB-DIVISIONAL MEANS— OCTOBER 1963 (ASVINA— 9, KARTIKA 9, 1885 SAKA)

	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %		Cloud			Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %		Cloud	
					0830 hrs. I.S.T.	1730 hrs. I.S.T.	0830 hrs. I.S.T.	1730 hrs. I.S.T.						0830 hrs. I.S.T.	1730 hrs. I.S.T.		
1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
Division									Division—(Contd.)								
1. Assam (Including Manipur & Tripura)	177.1 +43.3	132	28.8 -0.8	21.2 +0.1	84 +2	82	5.1 +0.7	4.2	8. Rajasthan . . .	10.4 +1.6	118	34.5 0	20.3 +1.4	56 +3	35	1.2 +0.3	1.6
2. West Bengal . . .	115.0 -14.3	89	30.8 -0.4	23.4 +0.5	79 +1	77	3.4 +0.2	3.8	9. Madhya Pradesh	49.4 -1.3	97	31.5 +0.3	19.3 +0.8	70 +2	52	2.6 +0.4	3.3
3. Orissa . . .	261.8 +109.8	172	31.0 +0.1	23.1 +0.5	82 +4	78	3.8 +0.4	4.8	10. Gujarat State . .	34.0 +6.9	125	34.6 +0.4	22.2 +0.5	73 +3	49	1.8 +0.1	2.2
4. Bihar . . .	153.4 +85.4	226	30.4 -0.5	22.0 +0.7	79 +7	75	3.1 +0.7	3.1	11. Maharashtra State	84.2 +4.3	105	31.9 +0.2	21.4 +0.7	75 +3	58	3.4 +0.2	4.3
5. Uttar Pradesh . .	5.6 -35.4	14	32.7 +0.2	19.8 +0.9	70 +3	53	1.6 +0.5	1.7	12. Andhra Pradesh	245.5 +104.4	174	31.9 -0.1	23.5 +0.3	80 +3	67	4.2 +0.1	4.8
6. Punjab (India) (Including Himachal Pradesh and Delhi)*	0 -37.4	0	33.7 +1.1	18.2 +1.1	65 +3	43	0.6 -0.2	0.9	13. Madras State . .	185.1 -19.0	91	32.1 +0.2	24.0 +0.2	77 0	68	5.1 +0.7	5.6
7. Jammu and Kashmir	7.9 -21.1	27	23.8 +0.8	7.6 -0.3	62 +1	43	1.5 -0.5	2.1	14. Mysore . . .	204.1 +79.2	163	29.4 -0.5	20.9 +0.3	84 +6	66	5.3 +1.0	5.9
									15. Kerala . . .	220.1 -85.6	72	30.2 +0.4	23.9 0	86 +1	79	5.0 -0.4	5.8
Sub-division									Sub-division—(Contd.)								
1. Bay Islands . . .	367.1 +49.4	116	29.3 +0.5	23.8 +0.6	82 +1	89	6.2 +1.0	5.8	16. Madhya Pradesh (East)	69.8 +2.3	103	30.8 +0.3	23.2 +1.0	77 +3	62	3.1 +0.4	3.7
2. Assam (Including Manipur & Tripura)	177.1 +43.3	132	28.8 -0.8	21.2 +0.1	84 +2	82	5.1 +0.7	4.2	17. Gujarat Region	21.3 -11.4	65	35.6 +0.5	21.7 +0.7	69 -1	40	1.7 -0.1	2.2
3. Sub-Himalayan West Bengal	111.5 -38.2	74	29.4 -1.3	21.4 0	80 +2	76	3.4 +0.8	3.4	18. Saurashtra and Kutch	41.1 +17.1	171	34.0 +0.3	22.5 +0.3	76 +5	53	1.9 +0.2	2.2
4. Gangetic West Bengal	116.2 -5.6	95	31.3 -0.1	23.9 +0.7	79 +1	77	3.4 +0.1	3.9	19. Konkan . . .	70.5 -26.7	73	31.5 +0.4	24.2 +0.6	81 0	75	4.0 +0.2	4.1
5. Orissa . . .	261.8 +109.8	172	31.0 +0.1	23.1 +0.5	82 +4	78	3.8 +0.4	4.8	20. Madhya Maharashtra	95.9 +6.1	107	32.1 +0.3	19.9 +0.1	75 +3	51	3.3 +0.2	4.7
6. Bihar Plateau . .	241.2 +161.8	304	29.9 -0.4	21.5 +1.0	80 +10	77	3.7 +1.0	4.2	21. Marathwada	80.1 +29.3	158	31.7 -0.4	20.4 +1.0	67 +5	49	3.3 +0.3	4.4
7. Bihar Plains . .	113.5 +50.7	181	30.7 -0.6	22.4 +0.6	78 +5	74	2.6 +0.5	2.4	22. Vidarbha . . .	84.3 +26.7	146	32.1 +0.2	21.4 +0.9	72 +3	54	3.1 +0.2	4.2
8. Uttar Pradesh (East)	8.1 -45.0	15	32.9 +0.3	20.2 +0.5	71 +1	56	2.1 +0.8	2.0	23. Coastal Andhra Pradesh	344.1 +151.6	179	32.0 +0.1	24.4 -0.2	81 +2	73	4.3 0	4.6
9. Uttar Pradesh (West)	1.8 -20.9	8	32.5 +0.1	19.2 +1.4	68 +6	49	1.0 +0.2	1.2	24. Telangana . . .	170.9 +90.9	214	31.5 -0.3	22.2 +0.5	81 +6	64	4.1 +0.2	4.9
10. Punjab (India) (Including Delhi)	0 -37.4	0	33.7 +1.1	18.2 +1.1	65 +3	43	0.6 -0.2	0.9	25. Rayalaseema . . .	114.9 +12.2	112	32.0 -0.5	23.1 +0.4	76 +2	57	4.2 +0.1	5.2
11. Himachal Pradesh,	0.3 ..	..	30.5 ..	14.3 ..	82 ..	55	1.2 ..	1.8	26. Madras State . .	185.1 -19.0	91	32.1 +0.2	24.0 +0.2	77 0	68	5.1 +0.7	5.6
12. Jammu and Kashmir,	7.9 -21.1	27	23.8 +0.8	7.6 -0.3	62 +1	43	1.5 +0.5	2.1	27. Coastal Mysore	224.6 +71.0	146	30.4 +0.1	23.2 -0.3	87 +2	78	5.7 +0.7	6.0
13. Rajasthan (West)	5.2 +0.9	121	35.3 -0.2	21.1 +1.7	56 +2	33	0.9 +0.1	0.9	28. Interior Mysore (North)	198.8 +116.9	213	30.2 -0.9	21.1 +0.6	79 +8	61	4.6 +1.4	5.7
14. Rajasthan (East)	15.7 +2.3	117	33.9 +0.1	19.7 +1.2	56 +3	37	1.5 +0.5	2.1	29. Interior Mysore (South)	200.0 +50.5	134	28.4 -0.4	19.8 +0.4	87 +6	66	5.8 +0.8	6.2
15. Madhya Pradesh (West)	33.3 -4.2	89	32.1 +0.3	18.6 +0.5	64 +2	45	2.2 +0.3	2.9	30. Kerala . . .	220.1 -85.6	72	30.2 +0.4	23.9 0	86 +1	79	5.0 -0.4	5.8
									31. Arabian Sea Islands	113.5 -51.9	69	30.7 +0.9	24.9 +0.1	79 +1	75	5.3 +0.7	5.3

NOTE :—The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh is not included.

Table with columns for Sub-Division and station, Hour of observation, Station elevation, Mean pressure, Mean temperature, Cloud amount, Wind speed, and No. of observations. Rows include Bay Islands (Maya Bandar, Long Island, Port Blair), Car Nicobar, Nancowry, Kondul, Assam (Pasighat, Dibrugarh, Digboi, North Lakhimpur, Sibsagar, Gohpur, Majbat, Jorhat), Tangla, Tezpur, Golaghat, Rangia, and Chhaparmukh.

(b) Mean of 29 days.

(h) Mean of 23 days.

(R) Register not received.

(g) Mean of 24 days.

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—OCTOBER, 1963 (ASVINA 9—KARTIKA 9, 1885 SAKA)

Table with 28 columns: Sub-Division and station, Hour of observation, Station elevation, Mean pressure, Mean temperature, Cloud amount, Wind speed, No. of observations (Wind direction). Rows include stations like Uttar Pradesh (Aligarh, Mainpuri, Agra, Orai, Jhansi, Pathankot, Amritsar, Ludhiana, Chandigarh, Ambala), Punjab (India) including Delhi, and Karnal.

*Observations not recorded.

Observations for 30 days

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—OCTOBER 1963 (ASVINA 9 —KARTIKA 9, 1885 SAKA)

Table with 28 columns: 1-3: Station and observation details; 4-10: Mean pressure and temperature; 11-12: Relative humidity; 13-14: Cloud amount; 15-18: Wind speed; 19-28: Wind direction (N, NE, E, SE, S, SW, W, NW, Calm, Variable). Rows include stations like Sacrashtia and Kutch, Karan, Bombay, and Poona.

TABLE III--SUMMARY OF OBSERVATIONS AT FIXED HOURS (OCTOBER 1963--ASVINA 9--KARTIKA 9, 1885 SAKA)

Sub-Division and Station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Mean wind speed in Km. per hour	Wind speed (Km. p.h.)			No. of observations										
			At mean sea level or height in ft. from nearest standard isobatic level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction										
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Hydrometeorological Observatories--Contd.																												
Kosi Catchment--																												
<i>Contd.</i>																												
Taplethok	0830	..	..	..	..	18.5	15.5	13.5	15.5	72	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	19.2	16.4	14.6	16.6	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur	0830	..	..	..	..	17.5	15.9	14.9	16.9	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	16.3	15.6	15.2	17.3	93	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung	0830	..	..	..	..	16.7	14.5	12.9	15.1	80	..	4.5	..	..	..	..	..	0*	0	0	0	1	0	1	0	29	0	..
	1130	..	..	..	..	19.5	16.0	13.8	15.9	70	..	4.5	..	..	..	..	..	0*	0	1	0	5	14	4	3	4	0	..
	1730	..	..	..	..	17.0	14.4	12.6	14.7	76	..	6.4	..	..	..	..	..	0*	0	0	0	0	18	5	0	8	0	..
Oshaldhunga	0830	..	..	..	..	16.3	14.7	13.7	15.7	85	..	3.6	..	..	0.7	0	0	7	0	0	0	1	1	3	2	0	24	0
	1130	..	..	..	..	18.3	15.7	14.2	16.2	73	..	4.0	..	..	2.5	0	0	22	0	0	0	1	3	7	10	1	9	0
	1730	..	..	..	..	13.9	14.6	13.9	15.8	88	..	5.1	..	..	3.6	0	0	22	1	0	1	0	2	1	16	1	9	0
Chainpur	0830	..	..	..	..	19.4	17.7	16.7	19.0	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	19.1	17.4	16.3	18.5	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Angbung†	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barahakshetra	0830	146	1013.6	996.3	..	23.3	21.3	20.2	23.7	81	..	3.1	..	1.9	0	0	19	1	8	2	2	0	5	1	0	12	0	
	1130	..	1011.8	995.3	..	27.5	23.4	21.3	25.3	69	..	4.2	..	3.9	0	0	28	0	0	2	1	0	20	3	1	3	1	
	1730	..	1009.6	992.1	..	24.6	22.7	21.7	25.9	84	..	3.9	..	2.2	0	0	21	0	3	7	7	2	2	0	0	10	0	
Tista Catchment																												
Gangtok	0830	1012	1525.6	1522.2	..	15.5	14.0	13.0	15.1	85	..	5.3	..	0.8	0	0	5	1	4	0	0	0	0	0	0	0	26	0
	1130	..	1513.5	1511.4	..	18.7	16.1	14.6	16.6	77	..	5.2	..	2.2	0	0	18	2	3	0	1	4	7	0	1	13	0	
	1730	..	1496.6	1493.5	..	16.5	14.8	13.8	15.7	84	..	6.0	..	0.7	0	0	6	0	3	0	1	2	0	0	0	25	0	
Gezing	0830	..	..	..	..	17.6	16.2	15.4	17.5	87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	17.4	16.2	15.5	17.6	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Estimated.

†Data not available.

MONTHLY MEANS OF UPPER WINDS

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 39 stations all the observations were taken by means of pilot balloons and at 15 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data up to 9.0 km. a. m. s. l. are given under Table IV and data above 9.0 km. a. m. s. l. under Table V.

In Tables IV and V :

n—represents the number of observations ;

V—represents the mean wind speed in metres per second irrespective of direction ;

v—represents the resultant mean velocity in metres per second ;

D—represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a. g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a. m. s. l. Of these, the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a. m. s. l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N.	Long. E.	Height of Anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
1.	Agartala	23°53'	91°15'	17	28th November, 1951	0530		1730	2330
2.	Ahmadabad	23°04'	72°38'	61	19th May, 1928	0530*	1130	1730*	2330
3.	Allahabad/Bamhraul	25°27'	81°44'	103	28th February, 1930	0530*	1130	1730*	2330
4.	Ambala	30°23'	76°46'	279	1st April, 1941	0530	1130	1730	2330
5.	Anantapur	14°41'	77°37'	365	12th February, 1946	0530		1730	2330
6.	Asansol	23°41'	86°59'	135	29th May, 1942	0530		1730	2330
7.	Aurangabad/Chikalhan	19°51'	75°24'	583	7th October, 1951	0530		1730	2330
8.	Bahraich	27°34'	81°36'	134	1st October, 1961	0530		1730	
9.	Bangalore	12°58'	77°35'	936	19th May, 1915	0530@	1130	1730@	2330
10.	Bareilly	28°22'	79°24'	181	12th January, 1943	0530		173	
11.	Begampet	17°27'	78°28'	543	1st September, 1929	0530		1730	2330
12.	Bhagalpur	25°14'	86°57'	61	19th May, 1950	0530		1730	
13.	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943	0530		1730	2330
14.	Bhubaneshwar	20°15'	85°50'	54	5th December, 1942	0530		1730	2330
15.	Bhuj/Rudramata	23°15'	69°48'	90	14th September, 1937	0530		1730	2330
16.	Bikaner	28°00'	73°18'	229	18th October, 1946	0530		1730	2330
17.	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933	0530*	1130	1730*	2330
18.	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921	0530*	1130	1730*	2330
19.	Cochin/Willingdon†	09°56'	76°14'	13	16th March, 1942	0530		1730	2330
20.	Dehra Dun	30°19'	78°03'	692	1st October, 1958	0530		1730	
21.	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June, 1948	0530	1130	1730	2330
22.	Gadag	15°25'	75°38'	650	3rd May, 1943	0530		1730	2330
23.	Gangtok	27°20'	88°37'	1778	21st June, 1963	0530		1730	
24.	Gauhati	26°05'	91°43'	55	12th March, 1955	0530*	1130	1730*	2330
25.	Gaya	24°45'	84°57'	119	19th March, 1937	0530		1730	2330
26.	Gopalpur	19°16'	84°53'	24	15th February, 1946	0530		1730	2330
27.	Gorakhpur	26°45'	83°22'	83	5th January, 1943	0530		1730	
28.	Gwalior	26°14'	78°15'	208	7th May, 1938	0530	1130	1730	2330
29.	Imphal/Tuliha	24°46'	93°54'	782	8th March, 1952	0530	1130	1730	2330
30.	Jabalpur	23°10'	79°57'	402	30th July, 1928	0530		1730	2330
31.	Jagdalpur	19°05'	82°02'	562	25th March, 1948	0530		1730	2330
32.	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953	0530		1730	2330
33.	Jamshedpur	22°49'	86°11'	144	23rd July, 1942	0530		1730	
34.	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530		1730	2330
35.	Jodhpur	26°18'	73°01'	229	15th October, 1934	0530*	1130	1730*	2330
36.	Lucknow/Amausi	26°45'	80°53'	133	20th November, 1950	0530		1730	2330
37.	Madras/Minambakkam	13°00'	80°11'	29	8th April, 1926	0530*	1130	1730*	2330
38.	Mangalore/Bajpe	12°55'	74°53'	104	25th May, 1959	0530		1730	2330
39.	Minicoy	08°18'	73°00'	15	14th April, 1941	0530		1730*	2330
40.	Nagpur/Sonegoan	21°06'	79°03'	316	23rd April, 1943	0530*	1130	1730*	2330
41.	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936	0530*	1130	1730*	2330
42.	Poona	18°32'	73°51'	593	5th January, 1925	0530		1730	2330
43.	Port Blair	11°40'	92°43'	95	29th October, 1945	0530*	1130	1730*	2330
44.	Raipur	21°14'	81°39'	308	15th July, 1944	0530		1730	2330
45.	Raxaul	26°59'	84°51'	83	28th October, 1957	0530		1730	
46.	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530		1730	2330
47.	Srinagar	34°06'	74°48'	1603	1st August, 1962	0530*		1730*	
48.	Tiruchirappalli	10°46'	78°43'	96	22nd June, 1936	0530		1730	2330
49.	Trivandrum	08°29'	76°57'	73	8th December, 1928	0530*	1130	1730*	2330
50.	Udaipur	24°35'	73°42'	587	24th June, 1947	0530		1730	2330
51.	Vengurla	15°52'	73°38'	8	22nd November, 1941	0530		1730	2330
52.	Veraval	20°54'	70°22'	17	13th October, 1941	0530		1730	2330
53.	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942	0530		1730	2330
54.	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928	0530*	1130	1730*	2330

*Radio wind ascents.

@Radiosonde ascents followed by optical theodolite.

†Naval Meteorological office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	AGARTALA												AHMADABAD															
	0530				1730				2330				0530*				1130				1730*							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.2	0.7	098	31	1.7	1.2	021	31	1.2	0.7	102	31	1.2	0.5	021	31	3.1	1.7	046	31	1.9	0.9	030				
0.15 a.g.	27	3.5	1.6	119	28	3.1	1.0	027	28	3.8	1.5	126	31	4.4	2.5	025	31	3.5	2.2	045	31	3.5	1.8	022				
0.3 a.m.s.l.	27	3.6	1.3	140	28	2.8	0.8	034	28	3.7	1.0	132	31	6.6	3.6	030	31	3.7	2.2	050	31	4.1	2.3	029				
0.6 "	26	3.7	0.7	148	28	3.0	0.3	014	28	3.7	0.6	137	31	6.3	3.2	040	31	4.5	2.6	070	31	3.6	2.2	027				
0.9 "	26	3.8	0.4	209	27	3.1	0.8	247	28	3.9	0.3	206	31	5.3	3.0	063	31	4.8	3.0	075	31	3.7	2.3	030				
1.5 "	22	5.4	0.2	321	27	3.9	1.8	233	26	4.2	0.9	232	31	5.5	3.2	078	31	5.4	3.4	080	31	5.0	2.4	025				
2.1 "	20	4.8	0.9	231	26	4.3	2.6	238	25	4.6	1.8	237	31	6.7	4.0	085	30	6.3	3.1	095	31	6.6	2.4	050				
3.0 "	20	5.8	2.9	234	26	6.5	3.9	259	22	5.1	3.7	257	31	7.1	2.4	094	29	6.6	2.9	080	31	7.3	2.7	080				
3.6 "	16	6.6	4.3	238	25	7.0	4.4	268	6	7.6	7.5	271	31	6.8	1.7	060	26	5.4	2.1	065	31	5.9	2.1	050				
4.5 "	15	7.6	5.3	257	17	8.5	6.6	278					31	6.0	2.6	333	24	4.5	1.9	010	31	5.8	0.9	330				
5.4 "	10	7.7	4.9	261	16	9.5	8.0	268					31	6.7	3.1	317	24	5.9	2.9	335	31	6.5	2.5	285				
6.0 "	10	6.9	5.7	263	14	9.5	8.9	273					31	6.6	3.6	303	24	7.1	4.3	310	31	6.9	3.7	297				
7.2 "	5	9.6	8.4	265	10	11.9	11.7	276					31	7.4	5.1	287	24	8.1	6.3	295	30	8.5	5.5	280				
9.0 "	1	30.0	30.0	270	3	17.2	17.0	281					31	13.0	12.0	257	16	12.5	10.7	272	30	11.6	9.4	260				

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA											
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.0	0.3	285	31	0.4	0.3	060	31	1.3	0.5	354	31	0.9	0.6	012	31	0.4	0.2	054	31	0.7	0.5	087				
0.15 a.g.	31	5.3	2.7	026	30	3.6	0.6	256	31	2.5	0.8	360	31	3.8	3.3	348	29	3.8	1.7	054	31	5.0	2.0	079				
0.3 a.m.s.l.	31	5.5	2.9	033	30	3.7	0.7	250	31	2.5	0.7	002	31	3.8	3.3	348	29	3.8	1.6	054	31	2.0	1.0	080				
0.6 "	31	5.1	3.1	046	31	3.8	1.2	357	31	2.9	0.9	335	31	3.9	3.2	350	28	4.6	1.8	043	31	5.7	2.6	357				
0.9 "	31	5.0	3.2	054	31	4.2	2.0	009	29	3.2	1.2	337	31	3.9	2.8	348	28	4.3	2.0	005	31	6.5	4.5	338				
1.5 "	29	5.0	3.2	068	31	5.1	2.9	349	27	4.3	2.4	332	31	4.1	2.7	330	29	5.2	3.1	326	31	7.5	6.7	321				
2.1 "	28	6.8	4.9	066	31	5.4	3.6	342	25	5.8	3.8	333	31	5.1	3.4	322	27	6.2	4.2	319	31	8.7	8.1	317				
3.0 "	28	7.9	5.5	078	31	6.1	4.0	316	24	6.8	4.8	315	31	6.1	4.3	322	25	6.4	4.1	334	23	9.1	8.5	321				
3.6 "	3	4.8	4.4	083	31	6.1	4.3	304	21	7.1	5.9	278	31	6.1	5.0	300	8	3.4	2.0	270	17	9.1	8.4	330				
4.5 "					31	6.7	4.6	285	19	7.5	6.1	279	31	6.7	5.4	292	3	3.0	2.9	302	9	8.3	7.8	326				
5.4 "					31	7.3	6.0	279	18	9.5	8.8	274	30	8.3	6.8	285					4	7.6	6.5	314				
6.0 "					31	9.2	7.9	280	16	9.9	9.6	276	30	10.3	7.9	285					1	8.5	8.5	320				
7.2 "					31	12.1	11.1	272	16	12.4	11.2	273	30	12.2	11.1	276												
9.0 "					30	17.1	16.7	269	11	26.9	16.7	275	30	17.1	16.7	268												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	AMBALA												ANANTAPUR											
	1130				1730				2330				0530				1730				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.1	0.6	125	31	2.0	1.8	317	31	1.3	0.7	320	31	1.4	0.3	133	31	3.3	1.8	071	31	2.0	0.9	072
0.15 a.g. . .	31	3.2	0.8	133	31	5.3	4.9	313	31	6.6	5.2	334	27	4.7	2.1	230	29	5.2	1.7	068	26	5.4	2.5	089
0.3 a.m.s.l. .	31	2.1	1.0	125	31	3.0	2.7	316	31	3.2	2.3	337												
0.6 " . . .	31	3.9	0.4	027	31	5.9	5.6	314	31	6.7	5.9	331	27	5.5	2.6	240	29	5.3	1.2	060	26	5.9	2.7	088
0.9 " . . .	31	5.0	2.3	332	31	6.5	6.3	313	31	7.1	6.7	327	27	5.5	1.5	233	29	5.8	0.7	036	26	6.0	2.3	075
1.5 " . . .	30	6.3	5.6	322	31	7.1	6.9	317	31	8.0	7.8	321	27	5.6	0.8	351	28	5.3	1.0	019	26	5.4	1.8	033
2.1 " . . .	30	7.7	7.1	321	30	7.9	7.7	321	31	8.4	8.1	319	26	5.6	2.2	030	25	5.4	1.7	347	24	5.3	1.6	001
3.0 " . . .	28	8.9	7.8	320	30	9.1	8.5	326	17	7.8	7.1	313	22	5.0	2.0	046	19	6.0	2.0	324	21	4.8	1.1	357
3.6 " . . .	25	8.3	7.4	323	27	8.4	7.9	323	6	8.3	8.1	321	20	5.2	1.7	084	15	6.3	2.5	002	16	4.4	1.8	060
4.5 " . . .	21	8.0	6.8	325	22	7.9	7.7	318	1	7.5	7.5	330	15	5.8	2.2	117	8	4.9	3.0	355	9	5.0	2.4	061
5.4 " . . .	20	8.5	7.4	299	22	9.9	9.1	306					11	4.7	1.3	071	7	5.8	3.7	333	2	4.3	4.2	109
6.0 " . . .	19	10.8	9.2	285	22	10.7	9.5	293					10	4.9	0.8	308	4	5.6	2.8	344	1	3.0	3.0	135
7.2 " . . .	9	15.8	14.3	282	8	17.3	16.2	275					8	4.6	0.3	138	2	4.3	1.9	066				
9.0 " . . .	3	33.0	32.5	273	1	38.0	38.0	270					4	6.1	5.6	105	1	5.5	5.5	040				

Station	ASANSOL												AURANGABAD/CHIKALTHAN											
	0530				1730				2330				0530				1730				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.4	0.2	071	31	0.5	0.4	054	31	0.5	0.4	095	31	1.7	0.2	010	31	4.6	2.5	037	31	1.4	1.1	061
0.15 a.g. . .	25	3.9	1.3	021	29	3.9	1.5	031	28	4.8	1.4	130	30	5.8	3.9	055	31	6.9	4.5	027	31	6.0	5.3	059
0.3 a.m.s.l. .	25	4.0	1.2	344	29	4.1	1.6	034	28	5.2	1.3	131												
0.6 " . . .	25	4.4	0.7	314	29	4.6	1.4	032	27	6.0	1.1	142												
0.9 " . . .	25	5.2	0.8	320	28	4.9	1.0	356	27	5.4	0.4	181	30	6.9	5.3	068	31	6.1	4.2	031	31	7.7	6.8	059
1.5 " . . .	23	4.9	2.5	323	27	5.1	1.6	294	25	5.2	1.9	280	28	7.3	5.9	068	31	6.9	5.0	037	31	8.5	6.5	053
2.1 " . . .	22	5.9	3.3	314	26	6.0	3.3	299	24	6.9	3.1	296	27	7.6	5.7	058	27	6.4	4.9	044	28	7.9	6.4	051
3.0 " . . .	21	6.8	4.8	379	21	7.5	5.5	287	22	6.2	4.4	278	25	6.9	4.0	037	18	6.5	4.5	034	20	7.2	4.9	042
3.6 " . . .	16	7.6	5.2	281	20	7.9	5.6	286	15	8.2	6.0	284	13	4.7	2.3	027	14	5.7	3.7	035	9	6.2	3.3	054
4.5 " . . .	12	7.4	3.8	280	20	8.1	5.6	281	7	7.9	3.3	276	3	7.0	6.6	055	13	6.0	3.8	026	1	4.0	4.0	095
5.4 " . . .	9	8.4	5.6	300	15	8.6	7.1	286	3	5.7	2.8	264	1	1.0	1.0	030	12	8.6	6.1	021				
6.0 " . . .	6	7.7	6.5	273	15	9.2	8.3	287	2	5.3	5.3	277	1	2.0	2.0	045	11	6.8	2.7	020				
7.2 " . . .	3	11.3	10.8	267	9	10.2	9.8	278	2	13.5	13.5	264					5	7.5	3.1	015				
9.0 " . . .	2	10.5	10.1	226	3	14.8	13.7	270									4	8.6	6.2	259				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	BAHRAICH												BANGALORE											
	0530				1130				1730				0530@				1130				1730@			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.3	0.2	090	31	0.4	0.2	128	31	0.2	0.1	320	31	1.9	0.7	212	31	3.0	0.6	250	31	2.5	0.5	268
0.15 a.g.	31	3.7	1.3	104	31	2.4	0.1	177	31	2.8	1.7	309	19	4.2	0.8	107	29	4.0	0.6	304	30	4.3	0.4	330
0.3 a.m.s.l.	31	3.7	0.9	125	31	2.4	0.2	167	31	2.9	1.8	307												
0.6 "	31	4.2	0.3	329	31	3.1	0.5	291	31	3.5	2.4	308												
0.9 "	31	4.5	1.2	328	30	3.6	1.3	292	31	4.2	2.9	307												
1.5 "	31	5.3	2.6	326	28	5.5	2.6	300	31	5.6	3.8	300	18	4.9	1.7	057	28	4.3	1.1	002	30	4.8	0.5	332
2.1 "	29	5.5	3.7	320	27	6.2	3.1	303	20	6.6	4.3	309	17	5.2	3.1	054	19	3.9	2.6	043	28	5.1	0.6	352
3.0 "	28	6.0	3.2	315	27	5.7	2.6	323	29	5.7	3.7	317	15	5.4	2.5	061	12	4.3	1.5	034	21	4.4	0.5	145
3.6 "	25	5.8	3.8	302	26	5.8	3.3	321	28	5.6	4.2	321	13	5.8	1.7	077	9	5.9	1.0	244	19	5.0	0.6	168
4.5 "	20	7.1	6.1	286	22	6.8	5.5	300	26	7.8	6.5	307	12	5.3	1.2	126	4	5.9	4.8	233	19	5.2	0.8	085
5.4 "	17	8.9	8.2	284	22	9.5	8.1	283	25	10.0	9.0	291	9	5.9	1.8	089	4	5.4	2.7	275	17	5.2	2.7	059
6.0 "	13	10.2	9.7	278	21	11.4	10.5	284	24	12.4	10.9	285	8	4.9	2.9	067	4	4.3	0.6	334	16	4.8	3.0	056
7.2 "	12	14.5	14.3	273	19	16.2	14.6	281	21	17.2	16.0	285	8	3.6	2.6	097	2	2.0	1.9	135	14	3.9	2.2	079
9.0 "	2	26.7	26.6	271	14	22.9	21.9	271	12	26.3	25.3	273	7	5.0	4.4	112	2	2.5	1.7	201	10	4.7	2.6	113

Station	BANGALORE				BAREILLY								BEGAMPET											
	2330				0530				1730				0530				1730				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.1	0.4	144	31	0.8	0.3	060	31	0.6	0.5	313	31	1.2	0.5	063	31	2.7	1.7	035	31	1.4	0.8	052
0.15 a.g.	26	5.9	2.1	127	31	4.4	1.1	180	31	3.3	2.6	310	29	4.1	1.4	072	31	5.3	3.0	050	30	5.3	3.1	078
0.3 a.m.s.l.					31	4.2	0.9	166	31	3.1	2.4	313												
0.6 "					31	4.4	1.8	261	31	4.2	3.5	307	29	3.2	1.0	060	31	4.4	2.5	047	30	3.9	2.2	074
0.9 "					31	4.5	2.4	300	31	4.9	2.9	322	29	5.7	2.7	078	30	5.7	2.9	046	30	6.2	3.7	079
1.5 "	26	6.2	0.7	136	31	6.8	5.5	319	31	6.1	5.4	297	26	6.1	3.8	055	29	5.8	2.4	050	28	6.5	3.8	060
2.1 "	22	5.3	1.0	286	31	7.8	6.6	321	31	7.2	6.1	308	25	5.6	3.5	041	26	5.6	3.0	052	25	6.3	3.9	033
3.0 "	19	5.3	1.7	272	30	7.3	5.4	324	30	6.4	5.5	312	24	5.5	3.6	052	25	6.0	2.9	047	23	6.7	2.6	055
3.6 "	10	4.9	1.7	092	28	7.4	5.8	323	29	6.2	5.3	320	23	5.4	3.8	057	22	6.0	3.0	060	16	5.5	3.3	075
4.5 "	6	5.3	5.8	076	23	6.2	5.6	302	29	7.7	6.9	316	19	6.6	4.6	066	18	6.2	2.9	054	7	7.6	5.3	053
5.4 "	2	2.3	0.9	209	17	7.5	5.9	286	27	9.6	8.5	302	16	4.9	2.3	015	16	4.8	2.1	032	4	4.9	1.2	074
6.0 "					13	9.8	8.3	269	27	11.2	10.0	292	15	5.4	2.9	343	12	5.9	2.2	003	2	4.5	3.7	320
7.2 "					9	14.7	13.5	257	16	15.1	14.1	285	13	5.0	1.1	296	5	4.8	3.4	095				
9.0 "													7	6.2	3.3	275	2	3.5	3.1	128				

TABLE IV.—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS.

Winds upto 9.0 Km. above mean sea-level.

October, 1963 (Avinia 9—Kartika 9, 1983—Saka)

Station	BHAGALPUR								BHOPAL/BARRAGARH												BHUBANESHWAR							
	0530				1730				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.9	0.4	112	31	1.2	0.2	008	31	0.7	0.3	019	31	2.7	2.3	022	31	1.7	1.4	041	31	1.6	0.6	014				
0.15 a.g.	31	3.3	0.7	181	28	3.2	1.0	318	31	5.1	2.9	074	31	5.4	4.7	018	31	6.8	5.6	049	23	3.7	1.6	307				
0.3 a.m.s.l.	29	3.3	0.4	119	28	3.4	1.1	323													23	3.7	0.6	268				
0.6 "	29	3.4	0.4	114	28	3.5	1.2	324	31	4.1	1.8	057	31	4.9	4.1	018	31	5.9	4.7	048	23	3.5	0.3	149				
0.9 "	29	3.9	0.3	002	28	3.5	1.1	313	31	5.9	4.5	064	31	6.0	5.2	023	31	7.1	6.3	048	23	3.6	1.2	087				
1.5 "	27	5.1	1.3	287	28	4.5	1.7	297	31	7.3	5.7	053	31	6.4	5.4	025	31	6.4	5.0	043	23	4.1	2.1	072				
2.1 "	26	6.5	2.7	283	25	5.7	4.0	277	31	7.5	5.7	035	31	6.2	5.0	028	31	5.6	4.1	047	22	3.9	2.1	081				
3.0 "	23	7.6	3.5	267	23	7.0	5.5	276	30	7.1	5.8	026	28	5.7	4.4	037	30	5.7	3.3	020	19	2.8	1.6	079				
3.6 "	22	7.4	4.6	265	22	7.1	5.8	217	29	5.9	3.5	017	25	5.7	3.6	025	11	4.8	2.7	012	17	2.7	0.9	073				
4.5 "	18	7.3	5.2	268	17	7.8	7.1	285	19	4.9	1.8	342	15	4.6	2.4	334					13	2.4	0.5	137				
5.4 "	13	8.3	6.7	285	11	9.6	9.2	291	15	6.1	3.4	314	12	5.2	3.3	289					12	3.5	0.9	118				
6.0 "	7	5.6	4.5	295	7	10.6	10.2	285	13	6.3	4.3	297	12	6.0	4.0	285					11	2.8	1.4	179				
7.2 "	6	10.0	9.6	283					10	9.1	7.9	282	6	8.7	8.1	272					5	3.5	2.7	079				
9.0 "									6	15.2	13.3	266	1	5.5	5.5	256					2	5.3	4.7	234				

Station	BHUBANESHWAR								BHUBANESHWAR												BIKANER							
	1730				2330				0530				1730				2330				0530							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.7	0.7	116	31	1.7	0.3	116	31	0.8	0.1	095	31	2.9	0.5	202	31	1.5	0.3	253	31	1.1	0.8	213				
0.15 a.g.	24	3.3	1.2	139	29	4.3	2.5	184	31	5.2	2.2	318	31	4.6	0.3	195	31	5.0	2.3	275	31	7.9	4.5	243				
0.3 a.m.s.l.	24	3.0	1.6	148	29	4.4	2.7	190	31	5.8	2.8	327	31	4.7	0.4	145	31	5.9	2.2	310	31	5.7	3.1	235				
0.6 "	24	2.8	1.2	115	29	4.1	2.0	186	31	6.7	1.8	304	31	4.8	0.5	155	31	6.1	1.5	320	31	7.2	5.0	260				
0.9 "	24	2.7	1.0	104	29	4.0	1.2	174	30	5.2	0.7	205	31	4.8	1.0	117	31	5.4	0.8	093	31	3.4	2.0	265				
1.5 "	23	3.4	1.9	044	27	4.2	1.5	089	30	5.9	3.8	136	31	4.4	1.3	102	30	4.9	2.9	120	31	4.0	2.9	276				
2.1 "	21	3.7	2.0	033	26	4.1	2.5	074	30	5.7	3.5	117	30	4.9	2.3	085	30	5.7	3.9	115	31	3.9	1.8	248				
3.0 "	16	3.0	1.8	036	18	3.4	1.1	092	29	6.6	4.9	055	28	6.2	3.1	085	29	5.7	3.2	072	30	4.4	2.6	353				
3.6 "	15	2.7	1.5	035	3	2.3	1.9	086	21	5.1	4.2	047	24	5.0	2.9	064	25	5.4	2.6	035	30	5.2	3.7	015				
4.5 "	10	3.3	1.8	310					9	3.8	1.9	035	22	4.9	3.0	029	14	3.8	1.9	036	29	5.3	3.6	345				
5.4 "	3	5.5	4.9	339					2	5.3	4.9	282	23	5.5	2.3	334	9	5.0	3.6	313	29	8.2	6.3	292				
6.0 "	3	7.0	6.4	292					2	5.7	5.3	264	23	5.9	3.0	317	8	6.0	4.1	293	29	10.5	8.2	263				
7.2 "	1	3.5	3.5	353									19	7.8	6.6	289	2	8.7	8.7	282	23	16.3	14.8	277				
9.0 "													13	12.9	12.3	265					10	24.3	23.3	272				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina, 9—Kartika, 9, 1885 Saka)

Station	BIKANER								BOMBAY/SANTACRUZ																			
	1730				2330				0530*				1130				1730*				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.6	0.4	278	31	0.6	0.5	232	31	0.5	0.5	078	31	2.0	0.8	087	31	4.5	3.5	308	31	1.6	1.2	060				
0.15 a.g.	31	3.4	2.5	268	31	5.6	1.9	236	31	4.1	1.5	047	31	3.4	1.3	055	31	5.7	4.2	310	31	4.3	2.6	020				
0.3 a.m.s.l.	31	3.1	2.2	272	31	4.3	1.9	239	31	4.3	1.7	055	31	3.6	1.6	059	31	5.3	3.8	320	31	4.9	3.2	018				
0.6 "	31	4.0	3.0	276	31	5.5	1.9	248	31	4.4	3.7	078	30	4.1	2.8	070	31	4.6	1.4	214	31	6.1	4.1	026				
0.9 "	31	3.7	2.9	279	31	4.5	1.8	256	31	4.9	3.1	067	29	5.7	4.0	078	31	4.8	2.4	012	31	6.8	4.6	036				
1.5 "	31	3.7	2.8	280	31	4.0	2.5	260	31	5.9	4.0	076	26	7.4	4.7	080	31	5.9	3.2	067	30	7.7	5.9	051				
2.1 "	31	4.0	2.5	280	31	4.0	2.4	263	31	6.1	3.8	079	25	7.5	4.1	061	31	6.0	4.4	085	29	7.4	6.1	068				
3.0 "	30	4.1	2.2	300	28	4.5	1.9	312	31	5.1	2.7	079	25	7.5	4.6	068	31	6.8	4.3	078	25	6.5	4.9	077				
3.6 "	29	4.0	2.3	312	8	5.4	4.2	336	31	6.1	1.6	071	25	7.3	3.7	068	31	6.4	3.6	068	18	6.8	4.2	075				
4.5 "	27	5.7	3.7	327	1	1.0	1.0	090	31	6.5	2.8	067	25	6.3	3.7	067	31	5.9	2.3	054	12	6.7	2.4	078				
5.4 "	26	8.3	6.7	305					31	7.5	2.8	058	23	7.2	4.4	059	31	6.2	2.7	066	4	4.4	2.0	003				
6.0 "	24	9.8	8.2	295					31	7.9	2.0	020	23	7.8	4.4	052	31	6.7	2.9	053	4	4.6	1.4	100				
7.2 "	9	13.3	12.0	300					31	7.0	1.6	329	21	6.8	1.9	060	31	6.6	1.1	165	2	5.3	4.3	311				
9.0 "	3	18.5	17.4	280					31	6.9	1.6	293	19	7.2	1.3	202	31	7.6	2.8	197								

Station	CALCUTTA/DUMDUM								GOCHIN/WILLINGDON†																			
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.6	0.4	035	31	1.6	0.5	047	31	0.6	0.3	058	31	0.9	0.3	109	31	1.0	0.4	092	31	2.8	1.8	265				
0.15 a.g.	31	3.6	0.4	341	29	3.4	0.6	091	31	3.5	0.9	348	28	4.6	0.8	176	27	3.1	1.5	083	26	4.2	3.7	261				
0.3 a.m.s.l.	31	3.8	0.1	092	29	3.6	0.5	096	31	2.2	0.8	355	28	4.8	0.8	175	27	2.9	0.3	007	26	4.9	4.1	262				
0.6 "	31	4.1	0.3	042	29	4.1	0.4	136	31	2.0	0.4	348	27	4.2	0.4	130	27	3.7	2.4	288	26	5.4	4.1	272				
0.9 "	31	4.5	0.3	030	25	4.2	0.4	113	31	3.9	0.7	080	27	4.0	0.5	026	27	3.9	2.5	290	26	4.8	3.7	276				
1.5 "	31	5.1	1.1	357	24	5.1	0.9	053	31	4.4	0.6	357	27	4.1	1.0	339	26	4.6	1.8	283	25	4.6	2.0	272				
2.1 "	31	5.1	1.3	275	21	5.9	0.3	179	31	5.3	2.1	273	27	4.7	1.2	327	25	5.5	1.7	280	24	4.9	1.7	279				
3.0 "	31	5.3	2.1	255	15	6.3	2.2	267	31	6.1	2.8	269	26	5.1	1.7	279	23	5.7	2.3	279	18	5.4	2.5	286				
3.6 "	31	6.2	2.5	248	8	6.7	3.2	258	31	6.6	3.3	258	7	6.7	4.3	315	14	6.2	3.3	262	9	5.5	4.3	292				
4.5 "	31	6.8	4.0	256	3	6.7	4.7	312	31	6.9	3.9	270	2	5.7	5.6	008	4	6.0	1.8	236	3	2.7	1.7	167				
5.4 "	31	7.2	4.8	260	2	5.3	4.6	244	31	7.6	4.9	264	2	6.5	5.9	394												
6.0 "	31	7.9	5.0	266	1	8.0	8.0	235	31	8.1	5.5	270	2	7.0	6.8	325												
7.2 "	31	8.3	6.2	267	1	17.5	17.5	250	31	7.7	6.2	274	2	8.2	7.8	306												
9.0 "	31	10.8	8.3	271	1	27.0	27.0	270	30	11.6	9.8	277	1	16.0	16.0	290												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	COCHIN/ WILLINGDON				DEHRADUN								DIBRUGARH/MOHANBARI															
	2330				0530				1730				0530				1130				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.7	0.3	026	31	0.3	0.3	015	31	0.6	0.6	269	31	1.1	0.8	055	31	1.3	1.1	068	31	0.7	0.5	055				
0.15 a.g. . .	25	2.8	0.2	174	30	1.4	0.7	062	31	2.9	1.6	287	26	4.4	3.9	055	29	3.2	2.3	063	31	2.9	2.0	070				
0.3 a.m.s.l. .	25	3.0	0.9	251									26	4.7	4.3	052	29	3.3	2.5	060	31	3.0	2.1	065				
0.6 " . . .	25	4.0	2.9	274									26	5.0	4.7	055	29	3.6	2.9	065	31	3.7	3.3	063				
0.9 " . . .	25	4.4	3.3	277	30	1.3	0.7	095	31	2.1	1.8	288	26	4.4	3.9	061	25	3.1	2.6	069	31	3.4	2.9	068				
1.5 " . . .	23	4.5	2.3	256	30	1.6	0.3	193	31	2.7	2.5	287	25	3.5	1.5	110	22	2.8	1.6	125	31	3.1	1.3	170				
2.1 " . . .	18	6.0	2.8	246	27	2.8	1.7	307	31	3.9	3.4	282	24	3.9	1.8	197	20	3.4	1.8	197	30	5.1	3.2	200				
3.0 " . . .	14	6.1	4.5	261	25	5.0	3.7	324	27	4.3	3.3	325	19	4.8	2.3	215	18	5.2	2.6	212	27	6.9	4.2	219				
3.6 " . . .	7	5.4	3.5	272	21	5.5	4.3	311	24	4.6	3.0	330	12	3.7	2.2	237	15	5.2	3.1	229	19	5.3	1.9	228				
4.5 " . . .					13	5.4	4.9	299	19	6.3	5.6	313	9	4.6	2.0	252	12	5.8	4.1	268	15	6.9	3.5	260				
5.4 " . . .					10	7.0	6.7	286	18	9.3	8.5	298	5	6.1	4.2	290	8	7.2	5.3	287	15	7.5	5.9	238				
6.0 " . . .					7	9.6	8.7	277	16	10.8	10.2	293	5	8.7	6.6	293	8	7.3	5.7	284	13	8.8	8.1	267				
7.2 " . . .									11	15.5	14.4	280	4	15.6	14.6	283	7	11.1	10.3	286	10	14.7	13.4	269				
9.0 " . . .									2	16.3	15.8	298	1	24.0	24.0	280	5	32.1	31.0	278	5	27.3	26.0	265				

Station	DIBRUGARH/ MOHANBARI				GADAG								GANGTOK															
	2330				0530				1730				2330				0530				1730							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.9	0.8	042	31	2.2	0.4	265	31	2.5	0.4	355	31	2.3	0.7	264	31	0.4	0.4	020	31	0.5	0.3	131				
0.15 a.g. . .	31	3.7	3.1	050	28	5.3	0.9	282	28	5.4	1.0	046	25	6.2	1.3	286	21	1.8	1.4	010	23	2.7	2.0	178				
0.3 a.m.s.l. .	31	3.6	3.1	055																								
0.6 " . . .	31	3.5	3.2	058																								
0.9 " . . .	31	3.2	2.9	071	28	6.1	1.5	015	28	5.3	1.0	036	25	6.5	1.1	327												
1.5 " . . .	30	2.5	1.4	120	25	5.8	2.9	060	28	5.8	2.2	041	23	5.0	2.7	069												
2.1 " . . .	27	4.2	2.8	215	23	6.1	4.5	064	27	6.1	2.9	039	22	5.6	3.6	078	21	1.4	0.9	328	23	2.2	1.8	181				
3.0 " . . .	26	6.1	4.8	218	20	5.8	4.6	058	22	5.5	2.6	057	20	5.9	4.1	050	20	1.5	0.8	140	19	1.7	1.0	165				
3.6 " . . .	14	5.0	3.6	223	20	5.2	3.3	065	16	5.8	2.5	055	16	5.8	3.3	050	20	2.2	0.5	143	17	2.1	0.9	222				
4.5 " . . .	6	6.9	4.6	270	14	4.7	1.7	064	9	5.3	2.2	101	11	5.4	2.9	049	15	5.7	2.5	272	8	4.6	3.1	270				
5.4 " . . .	3	12.0	10.3	260	10	5.6	3.9	082	8	5.2	2.0	117	9	5.9	1.1	033	14	11.4	9.5	277	6	8.5	6.4	284				
6.0 " . . .	2	7.7	7.5	315	9	4.6	3.3	084	7	4.2	1.5	162	4	5.4	2.8	070	12	9.5	8.1	269	6	9.1	7.3	281				
7.2 " . . .					8	4.9	1.1	060	3	3.8	1.6	111					10	13.5	11.9	269	3	8.7	7.5	318				
9.0 " . . .					5	5.3	0.2	320	2	5.7	5.5	118					2	25.5	25.3	263	1	24.5	24.5	290				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	GAUHATI												GAYA											
	0530*				1130				1730*				2330				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	0.3	0.2	056	31	1.8	1.0	033	29	0.7	0.3	047	31	1.0	0.6	068	31	0.7	0.5	112	31	1.0	0.6	038
0.15 a. g.	29	2.6	1.6	075	30	3.2	1.9	047	29	3.3	1.8	039	30	3.4	2.2	090	26	3.9	2.0	208	27	3.1	2.1	348
0.3 a.m.s.l.	29	2.9	1.6	071	30	3.3	1.9	054	29	3.4	1.7	042	30	3.5	2.1	088	26	3.8	1.6	215	27	3.1	2.1	346
0.6 „	29	3.9	1.3	092	30	3.6	1.3	061	29	3.4	1.3	076	30	3.9	1.9	093	26	3.5	0.2	280	27	3.3	2.1	337
0.9 „	29	4.8	1.3	098	29	4.6	1.0	124	29	3.8	0.7	135	30	4.4	0.6	107	25	3.7	1.1	322	26	3.7	2.3	316
1.5 „	29	5.4	2.0	090	27	5.5	0.6	186	29	5.1	1.0	209	30	5.0	3.5	102	23	4.7	3.0	310	25	4.6	3.4	291
2.1 „	29	5.8	1.0	243	25	5.4	1.0	200	29	5.9	2.4	239	30	5.7	1.4	237	21	5.8	4.6	304	24	6.0	4.5	289
3.0 „	29	5.4	2.0	259	22	7.0	2.5	243	29	6.6	3.4	261	27	6.5	2.4	254	20	8.0	5.3	290	23	7.1	6.0	287
3.6 „	29	6.7	3.8	264	18	7.4	3.0	242	28	8.4	4.9	276	22	7.3	5.5	260	17	7.4	5.5	276	21	7.3	6.8	281
4.5 „	29	7.9	6.4	266	15	8.4	5.2	268	28	9.6	7.6	270	15	7.1	6.1	258	13	7.1	5.3	273	19	7.5	7.0	281
5.4 „	29	9.6	8.2	269	14	9.1	7.6	267	28	10.3	8.5	269	12	8.2	6.4	260	9	7.9	5.7	288	17	8.6	8.0	287
6.0 „	29	11.1	10.0	269	14	10.9	9.5	266	27	10.9	9.8	270	9	9.6		251	7	7.5	5.9	280	14	10.1	9.7	285
7.2 „	29	14.4	13.3	270	11	15.8	14.8	262	27	14.7	13.5	266	4	9.3	8.9	252	1	10.5	10.5	290	8	11.6	10.8	285
9.0 „	25	18.9	16.7	266	10	20.9	20.1	255	26	17.7	16.9	273	2	14.2	13.4	241					2	18.5	16.9	303

Station	GAYA				GOPALPUR								GORAKHPUR											
	2330				0530				1730				2330				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	0.7	0.3	110	31	1.7	1.2	331	31	2.3	1.5	149	31	1.5	0.5	206	31	0.9	0.3	058	31	1.1	0.3	240
0.15 a. g.	28	3.2	0.5	210	26	3.7	2.7	313	28	3.9	1.9	144	27	3.2	1.4	218	31	3.9	0.7	303	29	3.0	1.2	303
0.3 a.m.s.l.	28	3.3	0.3	242	26	3.3	1.3	278	28	4.0	1.8	046	27	3.2	1.7	187	31	4.2	0.5	237	29	3.4	1.4	299
0.6 „	28	3.4	0.7	330	26	3.2	0.5	211	28	3.8	0.8	124	27	3.2	1.3	163	31	4.7	0.1	263	29	4.0	2.2	290
0.9 „	26	3.6	1.8	316	26	3.2	0.5	103	28	4.4	0.5	093	27	3.6	1.0	090	30	5.1	0.7	324	29	4.7	2.5	293
1.5 „	24	4.8	3.5	296	26	3.9	1.6	062	28	4.9	1.2	025	27	4.2	1.6	057	28	5.3	2.7	297	29	5.7	3.0	299
2.1 „	24	6.8	4.4	300	25	4.4	1.5	064	26	4.3	1.7	017	26	4.1	1.7	067	27	6.3	2.8	310	29	6.5	3.5	305
3.0 „	22	6.7	4.0	273	25	3.6	1.4	065	24	3.6	2.0	027	24	2.6	1.3	088	26	5.6	2.6	299	27	5.7	2.9	311
3.6 „	5	3.2	0.5	209	24	3.7	1.3	128	22	3.5	1.1	080	11	2.7	0.8	091	19	5.6	3.2	293	25	6.5	4.8	305
4.5 „					20	3.0	0.6	111	21	3.6	0.8	190	4	2.4	1.6	071	16	6.3	5.6	283	21	7.1	6.5	291
5.4 „					19	3.6	0.1	071	20	4.0	1.3	229					14	7.3	6.4	279	21	10.0	9.1	285
6.0 „					17	4.8	0.5	349	20	4.0	0.8	273					10	8.5	8.1	275	19	12.9	11.9	283
7.2 „					7	4.6	2.3	016	20	6.1	1.0	326					3	7.7	7.6	270	7	16.0	15.4	279
9.0 „					5	4.3	1.2	093	13	7.3	2.6	214									4	23.0	23.0	268

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	GWALIOR																IMPHAL/TULIHAL											
	0530				1130				1730				2330				0530				1130							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.5	0.4	264	31	1.4	0.3	311	31	1.0	0.6	345	31	0.2	0.1	255	31	0.3	0.3	050	31	0.8	0.3	140				
0.15 a. g.	30	3.8	1.6	240	31	2.6	0.9	291	31	4.0	2.8	339	31	3.6	1.0	091	12	2.0	1.0	055	28	1.4	0.7	161				
0.3 a.m.s.l.	30	3.2	1.6	233	31	2.7	0.8	298	31	3.3	2.3	347	31	3.0	0.8	251												
0.6 "	30	3.8	0.3	271	31	2.6	1.0	316	31	4.6	3.8	347	31	3.6	1.6	030												
0.9 "	30	3.4	1.2	358	31	3.0	1.6	332	31	4.5	3.9	347	31	3.3	2.1	002	12	1.8	1.2	054	28	1.5	0.9	162				
1.5 "	30	5.6	4.5	356	31	5.3	3.6	352	31	4.9	4.3	341	31	5.3	4.3	339	12	2.9	2.0	118	27	2.8	1.1	244				
2.1 "	29	7.6	6.4	352	29	7.0	5.4	356	31	5.8	4.7	342	31	7.0	5.9	340	9	5.1	1.9	181	23	3.8	1.9	255				
3.0 "	29	8.2	7.3	354	26	7.5	6.3	357	30	6.9	5.8	337	28	7.5	5.7	335	6	6.7	4.2	243	19	6.6	5.5	259				
3.6 "	29	7.7	6.5	348	27	5.9	4.4	345	28	6.8	6.0	337	6	5.8	4.6	337	6	8.2	5.1	243	14	7.6	7.0	253				
4.5 "	26	6.1	4.5	306	23	5.9	4.7	303	25	7.5	6.6	314					2	9.3	8.7	281	7	10.6	9.6	263				
5.4 "	24	8.4	7.1	285	22	9.0	7.4	291	24	9.2	7.6	304									2	6.5	6.5	257				
6.0 "	24	9.8	8.1	280	21	10.1	8.2	286	24	9.9	8.4	295									1	4.0	4.0	190				
7.2 "	17	13.9	12.9	273	15	13.0	11.1	285	20	13.1	11.7	282																
9.0 "	7	18.3	17.7	261	8	20.2	19.5	269	10	20.9	19.8	274																

Station	IMPHAL/TULIHAL								JABALPUR								JAGDALPUR															
	1730				2330				0530				1730				2330				0530											
Time in I. S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.7	0.8	268	31	0.3	0.2	019	31	0.6	0.3	131	31	1.5	1.4	032	31	0.6	0.3	101	31	0.2	0.1	042								
0.15 a. g.	28	4.3	2.5	276	27	1.8	0.3	045	31	3.5	0.7	075	31	4.5	4.2	024	31	4.9	2.6	076	23	3.4	0.9	099								
0.3 a.m.s.l.																																
0.6 "									31	4.0	1.1	057	31	4.7	4.1	025	31	5.2	3.1	071	23	1.6	0.4	105								
0.9 "	28	6.1	2.6	278	27	1.8	0.6	059	30	5.3	2.6	053	31	5.3	5.0	025	31	5.5	4.0	057	23	4.6	1.6	094								
1.5 "	28	3.1	1.1	237	27	2.8	1.0	225	29	6.0	4.0	035	29	5.4	4.9	014	31	5.7	4.5	039	23	5.5	2.8	105								
2.1 "	24	3.9	2.3	243	26	5.2	2.7	213	28	6.3	4.7	021	28	5.6	4.2	006	29	5.1	3.9	227	20	5.4	3.6	065								
3.0 "	22	6.5	4.9	257	17	6.9	4.8	239	26	6.5	5.1	010	27	5.1	3.5	348	27	5.1	2.9	357	20	4.8	3.0	080								
3.6 "	20	7.9	6.4	260	12	6.5	6.1	254	24	8.3	2.2	345	26	4.8	2.6	313	20	5.1	2.1	338	20	3.9	3.0	089								
"	8	6.7	6.1	273	6	7.7	6.1	238	21	5.3	2.7	329	23	5.1	2.7	276	6	3.9	3.6	274	17	4.7	3.6	111								
"4 "	4	8.6	8.5	273	1	8.5	8.5	275	18	5.6	3.4	321	21	6.0	3.6	285	1	7.0	7.0	280	14	5.0	3.5	098								
6.0 "	1	0.5	0.5	270					15	6.3	3.8	312	21	6.4	3.9	286					12	4.8	2.1	073								
7.2 "									6	9.4	6.4	312	16	7.9	6.1	286					10	4.2	1.8	078								
9.0 "									2	7.7	7.7	305	4	8.6	8.1	249					4	11.0	8.8	268								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER								JAMSHEDPUR															
	1730				2330				0530				1730				2330				0530											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.7	0.4	060	31	0.4	0.2	045	31	0.8	0.6	327	31	1.6	0.8	325	31	1.1	0.5	349	31	0.7	0.4	342								
0.15 a. g.	29	3.9	2.9	053	31	4.3	3.1	072	31	4.8	1.6	275	31	4.2	2.1	319	31	5.1	0.7	025	29	2.5	1.2	321								
0.3 a.m.s.l.																					29	2.5	0.9	322								
0.6 „ . . .	29	2.4	1.8	048	31	2.8	1.6	064	31	4.9	1.9	276	31	4.1	2.1	320	31	5.3	0.7	332	28	3.4	1.0	294								
0.9 „ . . .	29	4.6	3.1	041	31	5.6	4.0	070	31	4.7	1.5	292	31	4.7	3.2	335	31	4.7	1.3	335	24	4.1	1.1	290								
1.5 „ . . .	29	5.2	2.5	053	30	5.6	3.2	081	31	4.6	2.7	349	31	4.4	3.6	337	31	4.6	2.8	355	19	4.4	2.8	300								
2.1 „ . . .	25	5.6	2.7	074	27	5.3	2.8	084	29	6.5	5.7	351	31	5.0	4.0	348	31	5.4	4.5	347	18	5.0	3.2	300								
3.0 „ . . .	19	5.2	3.7	089	20	3.9	2.1	090	29	7.7	6.6	359	31	6.1	5.2	346	30	6.5	5.3	347	14	5.6	3.7	291								
3.6 „ . . .	14	5.8	4.4	093	5	3.4	2.6	073	14	7.2	4.5	015	30	6.3	4.8	343	20	6.2	4.7	336	7	6.8	2.2	319								
4.5 „ . . .	13	4.2	2.4	100	1	4.0	4.0	115					28	9.8	7.1	312	3	9.2	8.9	291	3	6.2	3.2	312								
5.4 „ . . .	11	4.2	2.1	081	1	2.0	2.0	105					23	10.4	6.4	305					1	16.5	16.5	335								
6.0 „ . . .	11	5.1	1.4	077	1	3.0	3.0	110					21	11.6	9.6	283																
7.2 „ . . .	6	6.8	2.4	311	1	5.5	5.5	080					18	17.0	15.2	277																
9.0 „ . . .	2	2.7	2.5	122									5	24.3	23.6	285																

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR																			
	1730				0530				1730				2330				0530*				1130											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.2	0.7	102	31	1.4	1.1	047	31	1.5	0.4	089	31	1.3	0.7	078	31	0.8	0.2	026	31	0.8	0.4	280								
0.15 a. g.	27	3.0	0.9	097	30	3.0	2.0	061	29	3.0	1.1	079	28	3.7	1.9	130	31	4.5	2.2	287	31	2.8	1.4	252								
0.3 a.m.s.l.	27	3.0	1.1	102	30	2.7	2.1	053	29	2.6	0.7	090	28	3.2	1.7	115	31	3.6	1.6	302	31	2.6	1.2	261								
0.6 „ . . .	27	3.0	1.0	064	30	3.9	1.4	090	29	3.1	1.2	060	28	3.2	1.6	145	31	4.5	2.8	264	31	2.9	1.7	246								
0.9 „ . . .	27	3.4	1.3	032	30	4.2	1.3	085	29	3.6	1.4	049	28	3.0	0.8	130	31	3.8	1.9	253	31	3.2	1.4	253								
1.5 „ . . .	21	4.2	2.5	343	29	3.9	1.5	053	27	4.3	2.0	018	27	3.3	1.7	045	30	3.8	0.3	296	31	3.3	0.9	180								
2.1 „ . . .	18	5.9	3.9	330	27	4.3	1.3	024	26	5.2	2.4	009	23	3.5	1.8	029	29	4.1	0.7	017	31	4.6	1.1	087								
3.0 „ . . .	13	6.5	4.7	301	21	4.1	1.1	357	20	4.3	2.1	348	23	3.5	1.1	320	29	4.8	2.5	051	31	5.1	2.2	056								
3.6 „ . . .	7	6.1	5.7	282	20	4.1	0.9	324	19	3.4	1.5	314	9	2.7	1.5	231	24	5.6	3.1	026	30	5.1	1.8	003								
4.5 „ . . .	5	6.8	6.3	272	17	4.2	1.3	294	16	4.1	1.9	289					24	5.6	3.1	331	27	5.7	3.7	302								
5.4 „ . . .	2	10.0	9.6	289	13	4.5	2.7	296	14	4.9	3.1	265					23	8.1	5.6	236	26	8.6	6.5	283								
6.0 „ . . .					11	4.8	3.9	305	11	5.5	3.3	275					23	8.5	6.5	291	25	10.2	8.2	276								
7.2 „ . . .					6	7.2	6.0	293	10	6.7	4.7	286					23	12.5	10.2	276	16	15.5	15.0	269								
9.0 „ . . .					5	11.5	10.0	275	2	4.5	4.1	302					23	18.9	17.3	267	11	22.1	21.9	263								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MINAMBAKKAM							
	1730*				2330				0530				1730				2330				0530*							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.5	0.5	232	31	1.5	0.8	221	31	0.8	0.1	201	31	2.0	1.1	333	31	0.9	0.2	140	31	2.7	1.1	200				
0.15 a.g.	30	3.5	1.0	350	31	7.2	4.2	217	31	4.5	0.7	239	31	4.1	2.1	332	31	4.9	0.1	267	31	4.8	2.3	220				
0.3 a.m.s.l.	30	3.3	0.8	014	31	6.3	3.5	221	31	4.7	0.5	210	31	4.1	2.2	334	31	4.9	0.5	061	31	5.2	2.4	218				
0.6 "	30	3.7	0.6	348	31	6.8	3.4	220	31	4.6	0.5	322	31	4.3	2.6	323	31	4.5	1.5	335	31	5.6	2.3	218				
0.9 "	30	3.8	0.7	292	31	5.9	2.3	223	31	4.7	1.6	347	31	4.6	3.0	322	31	4.9	3.0	318	31	4.9	1.2	218				
1.5 "	30	3.5	1.0	303	30	5.0	0.5	216	31	5.8	3.0	341	30	4.9	3.3	316	30	6.4	4.4	322	31	5.3	0.7	250				
2.1 "	29	4.0	1.0	073	30	4.3	1.6	026	30	6.6	4.1	340	29	5.5	3.8	324	30	6.6	4.6	324	31	6.4	0.6	012				
3.0 "	30	4.8	1.6	022	30	5.5	2.6	037	24	6.6	4.4	338	28	6.4	4.6	323	27	5.9	4.0	316	31	7.0	0.6	154				
3.6 "	30	5.0	2.5	003	17	5.5	3.8	030	9	4.6	1.9	320	22	6.9	6.2	309	5	5.9	4.1	355	31	7.1	1.6	169				
4.5 "	27	6.8	4.6	310	10	5.6	4.7	010	8	5.4	4.3	269	22	8.1	7.9	301	1	7.5	7.5	330	31	7.3	2.4	166				
5.4 "	25	9.3	6.5	292	5	6.6	6.0	338	5	6.6	5.1	262	22	9.9	9.1	291	1	14.0	14.0	320	31	7.5	1.5	154				
6.0 "	25	11.2	8.4	286	3	7.2	5.4	324	3	10.8	10.2	245	21	11.6	11.0	283	1	16.5	16.5	315	31	7.2	1.8	128				
7.2 "	25	13.7	12.0	272	1	11.0	11.0	270	2	15.7	15.3	258	17	15.9	13.6	267					31	5.9	1.8	132				
9.0 "	25	20.0	18.7	266	1	24.0	24.0	245	2	17.3	16.3	258	9	22.7	22.4	264					31	6.6	5.2	113				

Station	MADRAS/MINAMBAKKAM								MANGALORE/BAJPE																			
	1130				1730*				2330				0530				1730				2330*							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.8	0.6	178	31	4.0	2.8	120	31	2.5	1.2	157	31	2.0	1.2	098	31	3.1	2.3	273	31	2.0	0.6	118				
0.15 a.g.	31	4.6	0.7	167	31	5.3	3.8	113	31	5.5	3.3	153	27	4.7	3.1	124	28	5.2	4.0	263	27	4.2	0.7	243				
0.3 a.m.s.l.	31	5.0	0.9	171	31	5.4	3.5	117	31	6.3	3.7	154	27	4.7	2.4	133	28	5.6	4.3	265	27	4.5	0.9	269				
0.6 "	31	5.2	1.4	188	31	5.1	2.7	127	31	6.3	2.7	150	27	4.3	0.7	201	28	5.2	3.6	272	27	4.6	1.8	285				
0.9 "	30	5.1	1.1	189	31	4.9	1.5	134	31	5.6	1.8	145	27	4.3	0.5	241	27	4.0	1.8	282	27	3.7	1.3	291				
1.5 "	27	5.4	0.3	280	31	5.2	0.3	083	29	4.8	0.4	183	26	4.5	0.8	053	24	4.3	0.3	355	27	4.5	0.7	086				
2.1 "	23	5.8	0.8	046	31	6.4	0.5	233	28	5.6	0.5	344	24	4.9	1.9	075	20	5.0	1.3	102	24	6.3	2.4	081				
3.0 "	20	6.9	1.0	099	31	7.8	1.8	272	25	6.9	0.7	175	20	5.4	2.8	074	18	5.8	0.6	157	18	6.6	1.6	073				
3.6 "	15	8.5	1.5	181	31	8.2	2.0	208	15	8.4	1.8	177	18	6.3	2.8	061	15	6.2	1.2	083	10	6.7	1.7	276				
4.5 "	14	8.1	1.5	141	31	7.1	1.2	189	3	14.7	8.7	139	18	5.7	2.5	054	10	5.4	2.4	067	3	7.3	3.3	290				
5.4 "	8	8.1	2.9	164	31	6.9	0.9	135	2	17.0	10.0	147	12	3.7	0.2	107	9	6.7	3.9	051	3	6.7	4.5	004				
6.0 "	6	8.4	2.4	160	31	6.4	0.8	115	2	16.3	9.3	139	12	3.5	1.5	094	8	5.7	3.2	053	2	5.7	4.9	078				
7.2 "	5	9.0	3.8	136	31	5.3	1.3	130	2	20.5	15.1	134	5	3.6	1.6	102	6	3.3	1.3	133								
9.0 "	4	7.7	7.0	134	30	6.1	4.1	127	2	13.0	11.6	135	2	3.3	3.3	093	3	10.2	9.1	132								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	MINICOY												NAGPUR/SONEGAON															
	0530				1730*				2330				0530*				1130				1730*							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.9	1.6	285	31	2.4	2.0	277	31	2.1	1.8	289	31	1.4	1.2	019	31	1.8	1.4	031	30	1.9	1.6	036				
0.15 a. g. . .	31	4.4	3.8	285	31	5.8	4.8	274	29	4.4	3.3	278	24	4.3	3.4	035	31	3.2	2.6	029	28	3.9	3.2	040				
0.3 a.m.s.l. . .	31	4.5	3.8	287	31	5.4	4.8	279	29	4.4	3.5	279																
0.6 " . . .	31	4.8	4.1	284	31	5.5	4.6	285	29	4.8	4.0	280	25	4.7	3.9	051	31	3.3	2.6	049	29	4.2	4.1	032				
0.9 " . . .	31	5.2	4.5	286	31	5.6	4.7	286	29	5.1	4.2	283	24	4.9	3.5	072	28	3.3	2.6	048	29	3.9	3.2	048				
1.5 " . . .	30	4.6	3.9	287	31	5.9	5.0	279	30	5.1	4.0	287	31	5.0	3.6	060	24	4.5	3.4	050	30	4.7	3.3	045				
2.1 " . . .	30	5.1	4.0	284	31	5.8	4.8	276	30	5.4	3.9	284	31	5.0	3.1	050	21	5.1	3.7	045	30	5.1	3.6	044				
3.0 " . . .	29	5.2	3.5	279	31	6.1	4.6	280	27	5.5	3.5	284	31	4.9	2.4	047	18	3.9	1.7	028	30	4.6	2.5	042				
3.6 " . . .	28	4.8	2.4	279	31	5.3	3.5	280	20	5.2	2.9	288	31	4.2	1.7	060	18	3.8	1.5	055	30	3.9	1.3	044				
4.5 " . . .	24	4.3	0.7	337	31	4.2	2.1	291	11	4.8	1.1	245	30	4.8	1.4	023	17	4.6	1.5	034	30	4.2	1.0	042				
5.4 " . . .	21	5.1	0.9	043	31	5.0	0.9	006	4	5.5	4.9	080	29	4.7	1.1	036	16	5.0	1.6	020	29	4.6	0.8	009				
6.0 " . . .	19	5.0	1.6	109	31	5.0	0.7	063	4	6.3	6.1	086	29	4.3	1.2	039	16	4.7	0.5	346	29	4.5	1.2	313				
7.2 " . . .	13	4.8	2.8	100	31	6.3	2.7	111	2	8.7	8.7	115	29	5.8	1.9	334	16	5.6	2.0	285	28	5.5	1.3	272				
9.0 " . . .	8	5.9	5.7	105	31	6.6	4.0	097					29	6.7	4.1	258	12	6.6	4.1	246	28	7.3	5.0	254				

Station	NAGPUR/SONEGAON				NEW DELHI/SAFDARJUNG												POONA											
	2330				0530*				1130				1730*				2330				0530							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.2	0.6	031	31	1.4	0.8	297	31	1.8	1.4	298	31	1.3	1.0	335	31	0.5	0.2	272	31	0.1	0.1	090				
0.15 a. g. . .	29	4.9	3.0	063	31	5.0	2.2	258	31	3.3	2.0	300	31	4.5	3.7	335	31	4.1	2.2	360	31	3.0	1.7	057				
0.3 a.m.s.l. . .					31	4.7	2.1	260	31	3.0	2.0	311	31	4.2	3.5	335	31	3.5	1.6	015								
0.6 " . . .	29	5.1	3.6	067	31	4.7	1.8	289	31	3.7	2.4	297	31	4.6	4.1	331	31	4.7	3.3	345	31	1.4	0.3	195				
0.9 " . . .	29	5.4	4.2	067	31	4.9	2.5	318	31	4.5	3.2	307	31	4.9	4.4	325	31	5.6	5.0	330	31	4.7	2.9	060				
1.5 " . . .	28	5.7	4.9	046	31	7.3	5.9	325	31	6.0	4.9	325	31	6.4	5.8	318	31	7.7	7.3	317	29	7.4	5.8	078				
2.1 " . . .	27	5.6	4.7	041	31	9.5	8.7	322	31	7.9	7.1	330	31	7.8	6.8	318	30	8.7	8.2	310	25	7.3	5.4	075				
3.0 " . . .	25	4.2	1.8	031	31	10.1	9.4	333	29	9.0	8.0	337	31	7.9	7.5	332	16	9.6	7.6	302	22	6.7	4.7	063				
3.6 " . . .	15	3.5	0.9	075	30	9.5	8.8	332	27	8.8	7.5	341	31	7.4	7.0	328	1	8.0	8.0	330	19	5.7	3.4	046				
4.5 " . . .	5	2.3	0.8	195	30	7.1	5.0	332	26	9.2	7.5	330	31	7.7	7.4	318					14	6.6	4.2	035				
5.4 " . . .	2	2.0	1.1	103	30	8.3	6.3	289	23	11.0	8.3	321	31	9.0	8.6	305					7	5.3	4.1	052				
6.0 " . . .	1	1.0	1.0	330	30	10.4	9.1	282	21	12.8	10.5	313	31	11.6	10.6	293					7	5.1	3.7	031				
7.2 " . . .					31	17.7	16.5	275	9	17.0	13.8	307	31	16.5	15.1	280					4	4.5	2.3	050				
9.0 " . . .					31	26.3	24.9	268	3	25.2	24.3	287	31	24.5	23.4	275					2	2.0	1.9	149				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level
October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	POONA				PORT BLAIR																							
	1730				2330				0530*				1130				1730*				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.4	0.1	010	31	CALM				31	1.3	0.4	170	31	3.6	1.1	170	30	2.2	0.5	192	31	2.3	0.9	185			
0.15 a. g. . .	30	4.2	1.2	335	30	3.1	1.7	307	31	4.2	1.2	170	30	5.6	1.6	146	31	4.1	0.9	167	30	5.2	2.2	196				
0.3 a.m.s.l. . .									31	4.0	1.2	183	30	5.4	1.7	145	31	4.0	0.9	169	30	5.4	1.8	188				
0.6 " . . .	30	2.4	0.7	330	30	1.5	1.1	240	31	4.9	1.7	166	30	6.1	1.8	147	31	5.0	1.1	172	30	5.6	1.9	166				
0.9 " . . .	30	4.5	1.5	350	30	4.5	2.4	353	31	5.0	1.7	163	22	6.5	1.6	148	30	4.5	1.0	169	23	5.4	2.2	189				
1.5 " . . .	30	4.5	3.0	051	29	7.3	5.9	057	29	5.7	1.6	158	13	6.8	2.8	200	29	4.7	1.6	152	17	4.7	1.8	166				
2.1 " . . .	27	6.2	5.0	064	24	7.2	6.0	075	29	6.1	2.9	125	5	5.9	3.7	104	28	5.1	2.0	149	8	4.0	1.4	165				
3.0 " . . .	23	7.4	6.1	060	22	6.9	5.3	080	29	6.5	2.3	129	1	7.0	7.0	065	26	5.3	1.7	142	6	4.4	1.4	059				
3.6 " . . .	17	6.6	5.0	055	15	6.2	4.0	073	27	5.7	2.5	108					23	4.9	1.8	128	1	3.5	3.5	065				
4.5 " . . .	11	5.4	4.3	010	5	4.6	1.9	067	27	5.8	3.0	079					23	5.5	2.5	102								
5.4 " . . .	11	6.1	4.8	028	3	3.8	1.8	096	27	5.5	2.8	086					21	5.4	2.9	070								
6.0 " . . .	11	6.1	4.2	015	2	4.0	2.8	030	27	4.8	2.6	085					18	4.9	3.6	064								
7.2 " . . .	9	6.1	3.4	304					26	5.0	3.5	084					15	4.5	3.1	064								
9.0 " . . .	7	7.1	5.5	241					16	5.4	4.4	098					6	4.3	3.3	092								

Station	RAIPUR				RAXAUL				SILIGURI/ BAGHDGRA																			
	0530				1730				2330				0530				1730				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.0	0.7	033	31	1.6	1.1	047	31	1.5	0.5	076	31	0.6	0.6	082	31	0.4	0.0	254	31	1.8	1.6	063				
0.15 a. g. . .	30	3.9	2.6	033	31	3.7	2.8	047	31	4.8	2.8	094	25	3.0	2.3	098	29	3.2	1.7	275	28	3.7	3.4	061				
0.3 a.m.s.l. . .													25	2.9	2.1	108	29	3.4	1.7	271	28	3.7	3.3	073				
0.6 " . . .	30	4.4	2.7	058	31	4.1	3.1	048	31	4.9	3.3	086	25	3.4	1.5	135	29	4.0	1.9	264	28	3.7	2.6	090				
0.9 " . . .	30	4.4	2.7	058	31	4.4	3.3	043	31	4.6	3.1	079	24	3.9	0.7	159	29	4.5	2.1	264	26	3.5	1.6	089				
1.5 " . . .	27	4.5	2.4	060	29	4.7	3.2	030	29	4.6	3.3	049	22	3.9	1.1	304	28	5.3	2.5	285	25	3.8	0.7	085				
2.1 " . . .	27	5.1	2.9	044	28	4.9	3.3	017	28	4.8	3.6	036	22	4.9	1.6	326	26	4.9	1.5	293	24	3.4	0.8	129				
3.0 " . . .	25	5.1	2.4	064	24	4.1	1.4	040	24	3.7	1.2	051	14	3.4	1.5	299	21	4.5	1.1	310	21	4.8	0.3	276				
3.6 " . . .	22	3.8	0.6	064	22	3.0	0.2	187	18	3.1	0.7	123	11	4.3	2.6	293	17	5.0	3.7	285	19	4.7	3.5	275				
4.5 " . . .	17	3.5	1.2	007	18	3.3	0.7	321	1	1.0	1.0	275	6	3.8	2.3	295	8	6.5	3.3	303	15	6.9	5.9	269				
5.4 " . . .	16	4.3	1.1	308	17	4.1	0.7	254					4	10.5	10.1	277	4	8.0	6.9	290	12	6.9	6.2	276				
6.0 " . . .	15	4.3	1.4	308	15	4.3	1.5	265					4	13.5	12.9	279	4	10.1	9.3	289	10	8.5	8.2	289				
7.2 " . . .	2	6.7	2.7	357	6	6.3	4.5	285					1	17.0	17.0	270	2	11.7	8.7	313	4	13.5	12.7	287				
9.0 " . . .	1	4.5	4.5	100									1	22.0	22.0	285												

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	SILIGURI/BAGHDOGRA								SRINAGAR								TIRUCHCHIRAPPALLI							
	1730				2330				0530*				1730*				0530				1730			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.8	0.4	228	31	1.6	1.2	017	29	0.1	0.1	142	27	0.4	0.1	296	31	3.3	2.5	270	31	3.3	0.7	131
0.15 a.g. . .	28	2.9	1.2	225	29	2.7	1.3	066	29	1.6	0.2	111	27	1.7	0.2	266	30	6.3	4.3	276	30	4.5	1.6	126
0.3 a.m.s.l. .	28	3.0	1.3	227	29	2.7	0.8	085									30	6.9	4.8	276	30	4.6	1.5	136
0.6 „ . . .	28	3.6	1.7	230	29	3.3	0.5	176									30	6.4	4.1	274	30	4.8	1.1	187
0.9 „ . . .	28	3.9	1.4	233	29	3.7	0.7	220									30	5.4	2.3	270	30	5.0	1.3	229
1.5 „ . . .	26	4.2	1.7	260	24	4.1	0.5	158									29	4.5	0.8	289	28	5.4	1.7	273
2.1 „ . . .	23	4.3	1.6	260	22	3.2	1.4	266	29	1.4	0.2	170	27	1.6	0.4	270	27	5.0	1.2	299	26	6.0	2.9	272
3.0 „ . . .	16	4.5	2.3	299	15	4.3	2.7	281	29	1.5	0.2	305	27	2.3	0.6	318	25	5.8	1.9	266	24	7.7	4.8	275
3.6 „ . . .	15	5.6	2.6	273	5	5.4	4.8	251	29	2.1	0.6	005	27	3.0	1.0	274	20	5.8	2.7	236	23	7.9	4.6	270
4.5 „ . . .	11	8.8	7.2	280	1	3.0	3.0	295	29	3.6	1.1	315	27	4.1	2.1	279	17	5.5	1.2	229	22	7.2	2.6	249
5.4 „ . . .	11	10.0	8.9	283					28	5.0	2.8	299	27	5.8	3.2	287	13	5.2	1.1	095	20	5.5	0.2	219
6.0 „ . . .	9	11.4	11.3	276					28	6.3	5.2	290	27	7.1	5.6	287	13	5.5	2.8	077	15	6.3	0.5	057
7.2 „ . . .	3	16.3	16.3	269					26	10.2	9.6	285	26	9.8	8.8	287	9	6.7	3.8	079	8	5.0	3.4	090
9.0 „ . . .	1	18.0	18.0	270					26	16.7	15.8	279	24	17.4	16.0	281	2	7.3	7.3	087	3	7.8	7.7	125

Station	TIRUCHCHIRAPPALLI				TRIVANDRUM												UDAIPUR							
	2330				0530*				1130				1730*				2330				0530			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.2	0.9	190	31	1.9	1.4	003	31	2.5	2.0	289	31	3.3	2.6	292	31	1.4	1.1	360	31	0.1	0.1	295
0.15 a.g. . .	28	4.8	2.3	171	31	4.8	4.0	328	30	4.3	3.6	296	31	5.8	5.0	294	30	4.3	3.3	321	29	3.1	1.8	313
0.3 a.m.s.l. .	28	5.2	2.5	171	31	5.1	4.3	324	30	4.7	3.9	290	31	5.7	5.0	291	30	4.7	4.1	308				
0.6 „ . . .	28	6.0	2.7	181	31	5.8	4.7	304	30	4.6	3.7	297	31	5.8	5.2	290	30	5.7	4.9	293				
0.9 „ . . .	28	5.9	2.3	189	31	6.1	5.1	293	30	5.0	3.8	303	31	5.9	4.8	291	30	5.9	4.9	294	29	3.5	0.6	042
1.5 „ . . .	27	5.0	1.3	234	31	5.2	4.0	286	25	5.9	4.0	294	31	5.8	4.0	299	25	5.4	3.8	294	29	3.8	1.9	091
2.1 „ . . .	26	4.6	1.2	267	31	5.8	3.8	284	20	6.1	3.6	288	31	5.7	3.5	288	23	5.4	3.3	281	29	5.4	3.4	062
3.0 „ . . .	21	6.8	2.2	294	31	6.6	4.1	275	13	5.7	3.2	281	31	6.7	4.5	284	17	4.9	2.8	273	29	6.8	4.8	055
3.6 „ . . .	15	6.3	2.5	270	31	5.8	3.7	284	11	6.1	2.5	302	31	6.2	4.1	282	16	5.7	3.6	291	29	6.1	3.8	039
4.5 „ . . .	9	6.2	2.6	245	31	5.8	2.7	269	11	5.6	1.6	338	31	5.8	2.5	269	9	4.8	1.5	048	27	6.0	3.6	347
5.4 „ . . .	7	5.3	2.3	136	31	5.2	0.6	248	7	5.1	0.7	184	30	5.1	0.7	246	4	4.1	3.2	104	26	6.4	4.5	323
6.0 „ . . .	4	4.9	3.5	112	31	5.5	0.2	067	6	4.8	0.7	090	29	5.6	1.3	147	4	4.5	4.4	105	26	6.9	5.1	315
7.2 „ . . .	1	10.5	10.5	070	31	6.2	3.0	102	5	7.2	5.0	100	29	5.9	1.7	103	1	9.0	9.0	105	22	9.0	6.2	297
9.0 „ . . .					31	6.2	3.8	105	4	8.3	8.0	099	29	6.3	3.8	088					12	15.0	13.4	267

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	UDAIPUR								VENGURLA												VERAVAL							
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.0	0.3	377	31	C	A	L	M	31	0.7	0.4	021	31	2.2	1.5	262	31	0.6	0.2	026	31	4.1	2.2	008			
0.15 a. g.	29	3.3	0.7	001	30	2.5	0.7	350	29	3.5	1.5	058	29	4.4	2.8	266	31	3.9	1.7	007	30	8.5	5.9	009				
0.3 a. m. s. l.									29	4.1	1.2	054	29	4.8	3.2	273	31	4.8	2.1	350	30	8.9	5.2	017				
0.6 „									29	4.8	1.3	056	29	4.7	2.8	286	31	5.1	2.1	350	30	7.8	4.1	029				
0.9 „	29	3.6	1.0	008	30	3.5	1.3	031	23	5.3	2.0	061	29	4.4	1.6	300	31	5.4	2.0	352	30	6.9	3.7	057				
1.5 „	29	3.8	1.4	029	30	3.9	2.5	057	19	5.5	3.4	083	25	4.5	1.6	065	26	5.1	1.8	064	29	6.4	4.6	092				
2.1 „	29	4.4	2.3	029	30	4.9	3.2	050	13	4.6	3.9	077	21	5.9	2.8	076	19	6.6	4.3	077	27	6.8	5.4	091				
3.0 „	27	6.1	4.7	044	28	5.8	3.8	041	10	5.0	3.4	077	17	6.3	4.0	085	15	6.7	4.8	095	27	7.0	4.7	093				
3.6 „	25	5.9	4.3	036	16	3.4	2.2	002					14	6.1	3.9	089	6	6.1	4.1	102	14	5.6	2.4	074				
4.5 „	24	5.5	2.7	342	9	3.9	3.2	296					11	7.0	3.0	068	1	5.0	5.0	110	5	4.1	3.5	019				
5.4 „	21	6.4	4.2	335									11	7.5	3.3	060					5	4.3	3.3	025				
6.0 „	19	7.3	5.6	323									10	6.7	3.8	061					4	4.4	3.1	037				
7.2 „	17	8.7	6.2	306									5	5.5	4.6	105					1	2.5	2.5	290				
9.0 „	5	13.1	11.4	276									1	14.0	14.0	080												

Station	VERAVAL								VIJAYWADA/GANNAVARAM												VISHAKHAPATNAM											
	1730				2330				0530				1730				2330				0530*											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	5.6	2.3	268	31	3.7	1.2	339	31	1.7	0.8	005	31	2.6	0.9	087	31	1.5	0.7	097	31	2.3	1.6	007								
0.15 a. g.	31	6.2	2.4	273	31	7.6	4.2	348	29	3.6	0.5	036	27	4.0	1.7	105	29	4.8	2.2	123	31	6.3	5.0	008								
0.3 a. m. s. l.	31	6.0	1.5	255	31	8.1	4.2	355	29	4.7	0.5	071	27	4.0	1.6	104	29	5.5	2.4	062	31	5.8	3.7	020								
0.6 „	30	5.0	0.4	067	31	7.3	3.3	015	28	5.7	0.8	052	27	4.4	1.5	077	29	5.7	2.1	093	31	5.1	2.1	067								
0.9 „	30	4.8	1.1	070	31	6.4	3.1	047	28	6.1	1.3	035	27	5.1	1.7	055	27	5.4	1.1	349	31	4.7	1.9	095								
1.5 „	30	6.1	3.2	064	29	6.6	4.9	067	28	7.0	1.0	021	27	5.9	1.6	040	27	6.3	2.2	041	31	5.9	1.8	100								
2.1 „	29	6.1	4.4	047	29	7.7	6.0	076	28	6.8	1.1	050	27	6.1	2.0	041	27	6.1	1.8	053	31	5.8	1.6	116								
3.0 „	29	6.9	4.6	056	27	6.9	5.4	081	27	6.6	1.2	099	27	6.5	0.9	098	24	4.9	1.3	067	30	6.5	1.8	114								
3.6 „	28	5.6	3.1	061	21	5.2	2.8	072	26	6.3	1.5	114	24	6.5	1.1	131	18	5.0	2.4	105	30	6.5	2.7	132								
4.5 „	27	5.1	2.0	053	16	4.8	2.7	026	23	4.7	2.0	071	21	6.1	1.0	126	9	4.7	2.9	082	30	6.2	3.4	140								
5.4 „	27	4.8	1.5	024	5	5.3	2.3	331	21	5.1	2.5	055	19	5.1	1.1	065	8	4.0	2.2	089	30	5.8	2.3	137								
6.0 „	26	4.9	2.0	013	4	4.4	2.4	340	19	5.5	1.9	025	18	5.0	0.4	317	7	5.2	1.2	077	30	6.2	2.5	138								
7.2 „	24	5.6	2.7	324					17	5.6	0.8	023	15	4.9	0.6	263	2	4.5	4.1	136	30	7.2	0.9	169								
9.0 „	20	8.1	1.5	089					13	6.1	2.9	270	10	6.3	1.4	210					29	6.5	2.1	176								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Station	VISHAKHAPATNAM											
	1130				1730*				2330			
Time in I.S.T.												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.9	0.9	093	30	2.6	1.9	047	31	1.3	0.3	346
0.15 a.g. . .	26	2.3	0.8	110	30	5.0	3.5	040	31	2.7	0.3	126
0.3 a.m.s.l. .	26	2.2	1.0	113	30	5.1	2.9	051	31	3.1	0.9	151
0.6 „ . . .	26	2.4	1.1	121	30	4.7	1.8	090	31	3.8	1.7	132
0.9 „ . . .	22	3.1	1.2	096	30	5.0	2.2	108	29	4.4	1.8	115
1.5 „ . . .	12	4.0	2.4	045	30	5.5	1.6	072	27	4.8	2.1	074
2.1 „ . . .	10	4.5	3.0	015	30	6.7	1.7	077	26	5.1	2.5	073
3.0 „ . . .	9	3.5	0.8	335	30	6.9	1.3	090	21	4.5	2.0	092
3.6 „ . . .	8	3.4	0.9	270	30	6.8	1.8	146	15	3.1	2.0	085
4.5 „ . . .	6	3.7	0.6	116	30	6.3	2.7	170	10	3.4	2.2	112
5.4 „ . . .	4	4.4	0.8	246	30	6.3	2.0	185	9	3.3	0.9	117
6.0 „ . . .	3	4.7	0.9	342	30	6.9	1.6	206	9	4.1	1.0	092
7.2 „ . . .	3	4.3	1.5	316	30	7.3	2.0	200	2	5.0	4.5	045
9.0 „ . . .	3	4.2	2.5	250	29	7.8	2.5	197				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 km. above mean sea level

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Ht in m.	n	V	v	D
VIJAYWADA/ GANNAVARAM				
0530 hr.				
10.5	13	6.1	1.3	203
12.0	11	6.6	3.7	162
14.1	9	11.0	9.9	120
16.2	8	10.3	10.0	108
18.0	7	8.9	8.7	074
21.0	2	5.0	2.3	209
24.0	1	11.0	11.0	250
27.0	1	19.5	19.5	250
1730 hr.				
10.5	6	7.3	2.3	167
12.0	4	6.5	3.5	151
14.1	2	11.5	10.1	119
16.2	1	10.0	10.0	110
VISHAKHAPATNAM				
0530 hr.*				
10.5	29	6.0	2.1	137
12.0	29	7.9	7.1	147
14.1	26	10.8	8.6	135
16.2	25	12.1	10.3	109
18.0	18	11.3	9.3	094
21.0	11	11.7	10.9	097
24.0	4	11.4	9.7	095
1130 hr.				
10.5	3	5.7	3.1	250
12.0	3	6.7	2.4	199
14.1	3	10.7	6.2	197
16.2	2	9.5	8.9	099
18.0	2	7.5	7.4	089
21.0	2	5.0	2.7	116
1730 hr.*				
10.5	29	7.2	2.2	200
12.0	28	8.5	2.2	173
14.1	25	10.0	6.3	137
16.2	21	10.8	9.4	108
18.0	17	11.3	10.6	107
21.0	12	9.9	9.0	104
24.0	3	8.7	5.5	128

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

Serial No.	Name of Station	Type of instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	Ahmadabad	Fan type	20th July, 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Minicoy	Fan type	12th May, 1963	12	
10	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
11	New Delhi /Safdarjung	Clock type	3rd December, 1943	00 and 12	
12	Port Blair	Fan type	4th December, 1949	00 and 12	
13	Srinagar	Clock type	1st August, 1962	00 and 12	
14	Trivandrum	Fan type	1st July, 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 hr. G. M. T.

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Table with 4 main sections: AHMADABAD, ALLAHABAD/BAMHRAULI, BANGALORE, BOMBAY/SANTA CRUZ, CALCUTTA/DUM DUM, GAUHATI. Columns include Standard Pressure Surface mb., No. of obs., Ht. gpm., Temperature °A. (Mean, Max., Min., Dew point), and other meteorological data.

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 hr. G.M.T.

October, 1963 (Asvina 9—Kartika 9, 1885 Saka)

Standard Pressure Surface mb.	SRINAGAR Surf. Pr. (842 mb.)						TRIVANDRUM (1002 mb.)						VISHAKHAPATNAM (1003 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	28	1588	294.2	297	285	281.3	31	064	300.9	303	298	296.8	31	041	301.9	304	298	298.2
1000	28	076	..	..	..	..	31	077	..	..	..	..	31	069	..	..	..	..
900	27	1008	..	..	..	..	31	1003	293.5	296	291	289.6	31	1000	295.0	299	291	289.6
850	27	1504	..	..	..	..	31	1490	290.9	293	288	285.7	31	1494	292.2	295	289	286.3
800	27	2028	290.7	298	281	274.4	31	2014	287.9	291	285	282.5	31	2013	289.1	292	285	283.4
700	27	3154	282.0	287	274	266.9	31	3135	282.4	285	279	274.3	30	3141	283.5	286	280	276.2
600	27	4406	271.8	279	266	256.7	31	4400	275.6	278	273	269.8	30	4412	276.2	281	268	266.7
500	27	5827	260.7	268	256	..	29	5855	268.1	271	266	..	30	5874	268.5	275	265	..
400	26	7498	248.3	253	244	..	29	7574	257.1	261	253	..	30	7599	258.2	264	253	..
300	24	9547	235.4	240	229	..	29	9685	242.0	248	234	..	29	9721	243.7	251	238	..
250	22	10788	228.5	235	224	..	29	10952	231.3	239	225	..	29	10997	233.4	243	227	..
200	20	12257	222.9	231	217	..	29	12427	219.6	227	213	..	28	12481	221.6	230	216	..
175	15	13126	221.1	229	217	..	28	13268	212.7	221	203	..	28	13328	215.5	223	210	..
150	11	14087	216.3	221	213	..	27	14122	207.1	214	202	..	27	14298	208.9	215	203	..
125	8	15205	212.4	219	207	..	25	15307	201.3	207	194	..	24	15381	203.3	210	196	..
100	7	16569	209.3	214	202	..	25	16628	197.6	202	194	..	23	16721	199.0	204	191	..
80							23	17914	200.0	209	193	..	18	18075	200.8	205	193	..
70							23	18718	209.3	214	195	..	17	18865	203.1	209	195	..
60							19	19652	207.5	219	199	..	16	19780	206.5	213	198	..
50							17	20783	211.2	224	202	..	15	20869	210.5	218	203	..
40							10	22183	216.2	225	206	..	11	22180	215.2	221	206	..
30													5	24105	214.4	219	201	..
20																		
10																		

NOTE.—Numbers of observations refer to those of dynamic height. Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273°A.

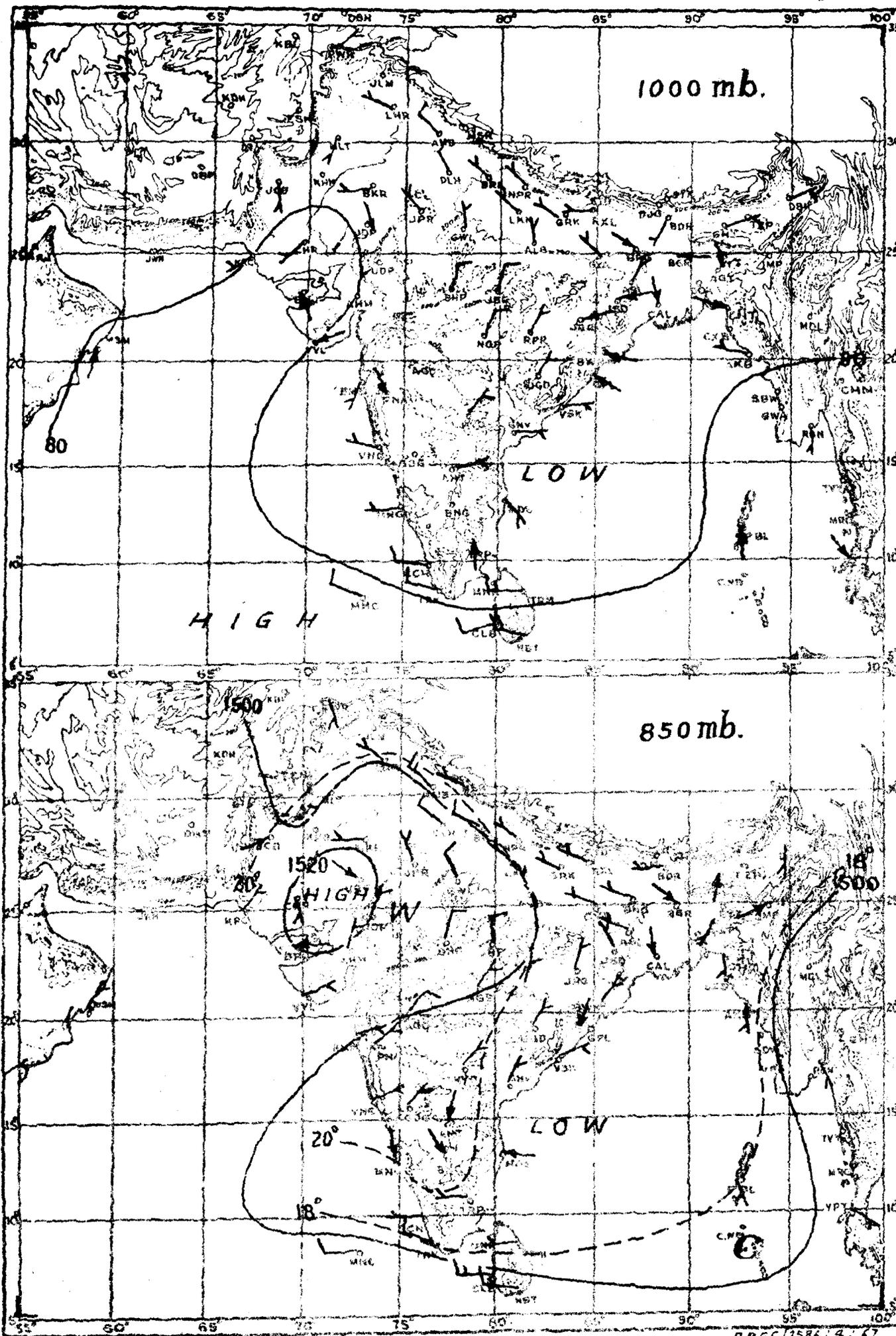
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

OCTOBER 1963

I.Met.D.

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

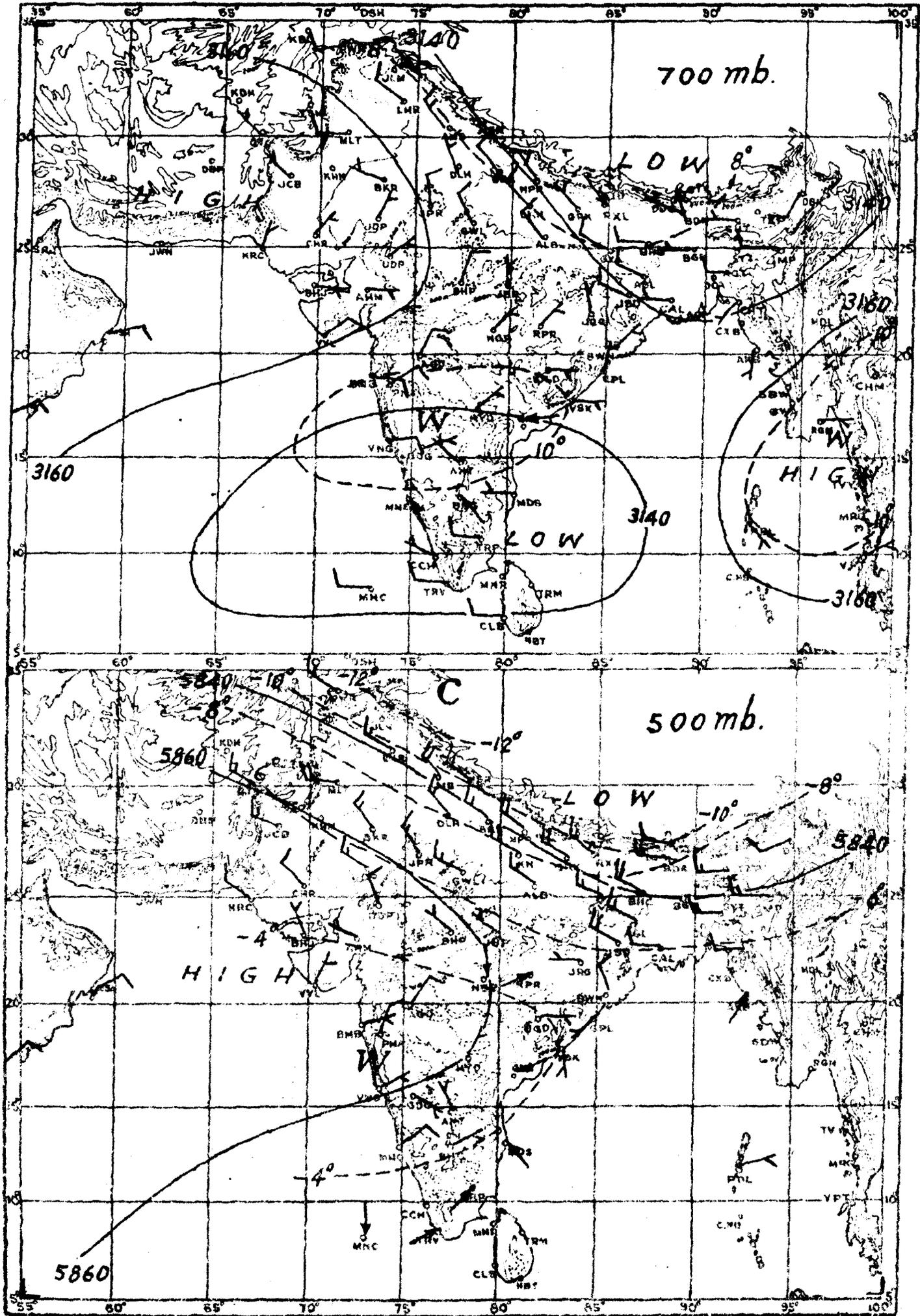
----- Isotherms in degrees cent grade ————— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I.Met.D.

OCTOBER 1963

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

November

Published by authority of the Government of India

Chief features :

- (1) Movement of six western disturbances across northern parts of the country, causing good precipitation in northwest India;
- (2) Good rainfall activity in the south Peninsula;
- (3) A spell of unusual rainfall in Gujarat and Maharashtra States during the third week; and
- (4) Formation and movement of a depression in the Arabian Sea during the last week and the development of two depressions, one in the Bay of Bengal and the other in the Arabian Sea, towards the end of the month.

Six western disturbances moved across the northern parts of the country during the month. Of these only the second disturbance was quite active and gave good precipitation over the Western Himalayas, Mussoorie recording 7 cm of rain on 8th. The last disturbance which was over Afghanistan on the 25th was moving eastwards across the Western Himalayas on the last day of the month. The details of the movement and activity of the various western disturbances are given in the accompanying statement.

STATEMENT SHOWING THE MOVEMENT AND ACTIVITY OF WESTERN DISTURBANCES DURING NOVEMBER, 1963.

S. No.	Period	Course	Region affected	Nature of precipitation	Period	Remarks.
1.	1st-6th	Punjab (I)—Uttar Pradesh—Assam.	Jammu and Kashmir Himachal Pradesh. Punjab (I). Uttar Pradesh, Bihar Plains. Bihar Plateau. Sub-Himalayan West Bengal.	Scattered/local rain or snow. Fairly widespread rain. Scattered rain. Scattered/local rain or snow. Local rain. Fairly widespread rain.	1st and 2nd 2nd 2nd 1st and 2nd 5th 5th 5th	
2.	5th-9th	Baluchistan—Punjab (I) Uttar Pradesh.	Jammu and Kashmir. Himachal Pradesh. Punjab (I) West Uttar Pradesh.	Local rain or snow. Local rain. Local/scattered rain. Scattered/local rain or snow.	7th 7th 7th and 8th 7th and 8th	Mussoorie 7 cm on 8th
3.	9th-11th	Northern divisions of West Pakistan—Jammu and Kashmir	West Uttar Pradesh.	Scattered rain.	11th and 12th	Feeble disturbance.
4.	13th-18th	West Pakistan—Rajasthan and adjoining Punjab (I)—Uttar Pradesh—Bihar Plains.	West Rajasthan, Jammu and Kashmir. Punjab (I). West Uttar Pradesh East Uttar Pradesh Bihar Plains.	Scattered rain Scattered rain or snow. Scattered rain. Scattered/local rain. Scattered rain. Scattered rain.	15th 15th and 16th. 15th 15th and 16th. 16th and 17th. 17th.	
5.	20th-25th	West Pakistan—Punjab (I) —Nepal Himalayas—Assam.	West Rajasthan, East Rajasthan Jammu and Kashmir Punjab (I).	Scattered rain. Scattered rain. Local/scattered rain. Local/fairly widespread rain.	21st. 21st, 22nd 21st, 22nd 21st, 22nd.	
6.	25th—(2nd December)	Afghanistan—Northern divisions of West Pakistan—Western Himalayas.	Jammu and Kashmir. Punjab (I). Himachal Pradesh	Scattered/local rain or snow. Scattered rain. Local rain.	27th, 28th, 29th. 28th, 29th, 30th. 29th, 30th.	

A trough of low pressure moving westwards across the south Bay of Bengal persisted over Coimorin and adjoining areas of the Peninsula from 2nd to 4th. It moved away westwards across south-east Arabian Sea by 5th. Under its influence, fairly well distributed rain or thundershowers with a few heavy falls occurred in the extreme south Peninsula during the first week. Nagapattinam recorded a very heavy fall of 15 cm of rain on 3rd. The other noteworthy amounts of rainfall were : Trivandrum and Fort Cochin 6 cm each and Tondi 5 cm on 2nd. Pamban 7cm on 3rd and Madras, Nagapattinam and Pamban 5 cm each on 4th. The rainfall activity over these parts decreased considerably during the second week; but it revived from the 14th for the next ten days, in association with the westward movement of three successive troughs of low pressure across the extreme south Peninsula. The first of these troughs of low pressure was feeble and appeared over southeast Bay of Bengal on 11th. It moved away slowly westwards across Laccadive Maldiva areas by 15th. The next trough was well marked

over the south Bay of Bengal on 15th and it moved away westwards across southeast Arabian Sea by 20th. The third trough also moved in the same way during the period 19th to 22nd. Some of the noteworthy amounts of rainfall recorded during this spell were : Madras 13 cm on 14th, Cuddalore 7 cm on 16th and 12 cm on 17th, Nagapattinam 10 cm on 17th, Dindigal 9 cm and Coonoor 7 cm on 19th and Palayancottai and Minicoy 7 cm each on 20th.

A marked trough of low pressure in the low level easterlies extended into Gujarat State and adjoining west Madhya Pradesh on 17th and persisted till 22nd. Under its influence, the moist easterlies penetrated into the north Peninsula and the central parts of the country causing heavy clouding over these areas during the third week. A few light thundershowers also occurred in north Madhya Pradesh and adjoining Uttar Pradesh, Rajasthan and Gujarat State.

The trough of low pressure which had moved into southeast Arabian Sea from the east towards the end of the third week moved northwards and concentrated into a depression by the evening of 24th, with centre near Lat. 18.5° N and Long. 65.0° E. Thereafter it moved in a northeasterly direction and weakened into a low pressure area over northeast Arabian Sea by 26th. The system became unimportant by 27th. Under its influence, there was fairly well distributed rain over the western parts of Maharashtra State, in south Gujarat State and west Madhya Pradesh on 21st and 22nd and over the entire Gujarat State and south Rajasthan on 25th and 26th. Rajgarh recorded 6 cm of rain on 22nd and Jamaagar 5 cm on 25th.

A trough of low pressure which was over the southwest Bay of Bengal on 27th moved westwards into southeast Arabian Sea and concentrated into a depression by the morning of 30th, with centre about 80 kms west of Minicoy. Almost simultaneously under the influence of a fresh trough of low pressure, another depression developed over the southeast Bay of Bengal on the morning of 30th, with centre near Lat. 5.0° N and Long. 89.5° E. In association with these developments the rainfall over the south Peninsula again increased from 28th. Kanyakumari recorded 8 cm of rain on 28th, Nagapattinam 7 cm on 29th and Ramanathapuram 17 cm and Cuddalore 9 cm on 30th.

Night temperatures were in general above normal over northwest India throughout the month, being appreciably to markedly so on a few days towards the end of the first week and also towards the end of the month. They were also above normal in Gujarat State, Uttar Pradesh and the central parts of the country except during the period 5th to 9th, being appreciable to markedly so on a number of days. During the last ten days of the month, the night temperatures over the Peninsula were also generally above normal.

The total rainfall for the month was in large excess in Bihar Plains, west Uttar Pradesh, the Punjab (I), Jammu and Kashmir, Rajasthan, West Madhya Pradesh, Gujarat State and the Arabian Sea Islands, in moderate excess in Sub-Himalayan West Bengal, Bihar Plateau and the Madras State and normal in the Konkan. It was in moderate defect in Assam, east Uttar Pradesh, Madhya Maharashtra and Kerala and in large defect in the Bay Islands, Gangetic West Bengal, Orissa, east Madhya Pradesh, Marathwada, coastal Andhra Pradesh and Mysore State. There was no rain in Vidarbha, Telangana and Rayalaseema. No data are available for Himachal Pradesh.

The mean maximum temperature was above normal in the Bay Islands, Orissa, Bihar Plateau, Madhya Pradesh, Vidarbha, coastal Andhra Pradesh, Telangana, coastal Mysore and the Arabian Sea Islands and below normal in Sub-Himalayan West Bengal. It was normal over the rest of the country outside Himachal Pradesh. The mean minimum temperature was normal in Assam, Sub-Himalayan West Bengal, coastal Andhra Pradesh, Telangana, the Madras and Mysore States, Kerala and the Arabian Sea Islands and above normal over the rest of the country outside Himachal Pradesh.

The mean relative humidity in the morning was above normal in Bihar State, Uttar Pradesh, the Punjab (I), Rajasthan, west Madhya Pradesh, Gujarat State, Vidarbha, Telangana and the Arabian Sea Islands and normal over the rest of the country outside Himachal Pradesh.

The mean cloud amount in the morning was below normal in Gangetic West Bengal, Orissa, Bihar Plateau, coastal Andhra Pradesh and Telangana and normal in Assam, east Madhya Pradesh, Maharashtra, Rayalaseema, Interior Mysore and Kerala. It was above normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and the 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I.S.T. of the date noted in the succeeding column; similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I.S.T. of the date given in the succeeding column.

II—SUMMARY OF OBSERVATIONS OF TEMPERATURE, RAINFALL AND WEATHER—NOVEMBER, 1963 (KARTIKA 10—AGRAHAYANA 9, 1885 SAKA, 603)

Sub-division and station	Air temperature in °C								Rainfall in millimetres					No. of rainy days (2.5 mm. or more)		Wind speed, km. per hour			Weather phenomena—No. of days with										
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total in the month	Departure from normal	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm.)	Precipitation (0.3 mm. or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust storm	Ground frost	Calc.	Scall	Live scall	
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 (a)	20 (b)	21	22	23	24	25	26	27	28	29
<p>Jammu and Kashmir</p> <p>Disgar (P)</p> <p>Jigit (R)</p> <p>Ikarl. (R)</p> <p>Jas</p> <p>Jonamarg*</p> <p>Jeh</p> <p>Jinagar</p> <p>Jinagar (Aerodrome).</p> <p>Julmarg</p> <p>Zarigan 1</p> <p>Lanihal</p> <p>Ammu</p> <p>Ammu (Aerodrome).</p>																													
<p>Jharkhand (West)</p> <p>Jhansanagar</p> <p>Jhuparh (R)</p> <p>Jhajaj</p> <p>Jhuru</p> <p>Jkaner</p> <p>Jagaur</p> <p>Jhalodi</p> <p>Jaisalmer</p> <p>Jodhpur</p> <p>Jarmer</p> <p>Jandabao (R)</p>																													
<p>Jharkhand (East)</p> <p>Jilani</p> <p>Jikar</p> <p>Jwar</p> <p>Jipur (Sanganer).</p> <p>Jholpur</p> <p>Jmer</p> <p>Jonk</p> <p>Jilwara</p> <p>Jota (Aerodrome)</p> <p>Jota</p> <p>Jinpura (Jawai Dam).</p> <p>Jambal (Rawat-thatta Dam).</p> <p>Jdaipur</p> <p>Jhalawar</p>																													
<p>Madhya Pradesh (West)</p> <p>Jwalior</p> <p>Jheopur</p> <p>Jivpuri</p> <p>Jwgong</p> <p>Jna</p> <p>Jnach</p> <p>Jigarh</p> <p>Jgar</p> <p>Jlam</p> <p>Jpal (Bairagarh)</p>																													
<p>Closed during winter Months</p>																													

(R) Register no. received.

(g) Mean of 24 days.

*Data not reliable.

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—NOVEMBER, 1963 (KARTIKA 10—AGRAHAYANA 9, 1885 SAKA)

Table with 28 columns: Sub-Division and Station, Hour of observation I.S.T., Station elevation in metres, Mean Pressure in millibars, Mean temperature in °C, Vapour pressure in mbs., Relative humidity %, Cloud amount (Okts), Wind speed (Km.p.h.), and No. of observations (Wind direction). Rows include Hill Stations Excluding Kashmir, Nepal, Sikkim, Hydrometeorological Observatories, Damodar Catchment, Mahanadi Catchment, Narmada Catchment, and Sabarmati Catchment.

(R) Register not received.

(i) Mean of 22 days.

*Estimated

MONTHLY MEANS OF UPPER WINDS

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 39 stations all the observations were taken by means of pilot balloons and at 15 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radio wind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data upto 9·0 km. a.m.s.l. are given under Table IV and data above 9·0 km. a.m.s.l. under Table V.

In Table IV and V :

n=represents the number of observations;

V=represents the mean wind speed in metres per second irrespective of direction;

v=represents the resultant mean velocity in metres per second;

D=represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0·15 km. a.g., 0·3, 0·6, 0·9, 1·5, 2·1, 3·0, 3·6, 4·5, 5·4, 6·0, 7·2, 9·0, 10·5, 12·0, 14·1, 16·2, 18·0, 21·0, 24·0, 27·0, 30·0, 33·0 and 36·0 km. a.m.s.l. Of these, the levels 1·5, 3·0, 5·4, 7·2, 9·0, 12·0, 14·1, 16·2, 18·0, 21·0, 24·0, 27·0 and 30·0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

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S. No.	Station	Lat. N.	Long. E.	Height of anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight (I.S.T.)			
1	Agartala	23°53'	91°15'	17	28th November, 1951 .	0530		1730	2330
2	Ahmadabad	23°04'	72°38'	61	19th May, 1928 . . .	0530*	1130	1730*	2330
3	Allahabad/Bamhrauli	25°27'	81°44'	103	28th February, 1930 .	0530*	1130	1730*	2330
4	Ambala	30°23'	76°46'	279	1st April, 1941 . . .	0530	1130	1730	2330
5	Anantapur	14°41'	77°37'	365	12th February, 1946 .	0530		1730	2330
6	Asansol	23°41'	86°59'	135	29th May, 1942 . . .	0530		1730	2330
7	Aurangabad/Chikalthan	19°51'	75°24'	385	7th October, 1951 . .	0530		1730	2330
8	Bahraich	27°34'	81°36'	134	1st October, 1961 . . .	0530		1730	
9	Bangalore	12°58'	77°35'	936	19th May, 1915 . . .	0530@	1130	1730@	2330
10	Bareilly	28°22'	79°24'	181	12th January, 1943 . .	0530		1730	
11	Begampet	17°27'	78°28'	543	1st September, 1929 .	0530		1730	2330
12	Bhagalpur	25°14'	86°57'	61	19th May, 1950 . . .	0530		1730	
13	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943 .	0530		1730	2330
14	Bhubaneswar	20°15'	85°50'	54	5th December, 1942 .	0530		1730	2330
15	Bhuj/Rudramata	23°15'	69°48'	90	14th September, 1937 .	0530		1730	2330
16	Bikaner	28°00'	73°18'	229	18th October, 1946 . .	0530		1730	2330
17	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933 . . .	0530*	1130	1730*	2330
18	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921 . . .	0530*	1130	1730*	2330
19	Cochin/Willingdon†	09°56'	76°14'	13	16th March, 1942 . . .	0530		1730	2330
20	Dehra Dun	30°19'	78°03'	692	1st October, 1958 . . .	0530		1730	
21	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June, 1948	0530	1130	1730	2330
22	Gadag	15°25'	75°38'	650	3rd May, 1943	0530		1730	2330
23	Gangtok	27°20'	88°37'	1778	1st , Jun. 1963	0830		1730	
24	Gauhati	26°05'	91°43'	55	12th March, 1955 . . .	0530*	1130	1730*	2330
25	Gaya	24°45'	84°57'	119	19th March, 1937 . . .	0530		1730	2330
26	Gopalpur	19°16'	84°53'	24	15th February, 1946 . .	0530		1730	2330
27	Gorakhpur	26°45'	83°22'	83	5th January, 1943 . . .	0530		1730	
28	Gwalior	26°14'	78°15'	208	7th May, 1938	0530	1130	1730	2330
29	Imphal/Tulihal	24°46'	93°54'	782	8th March, 1952	0530	1130	1730	2330
30	Jabalpur	23°10'	79°57'	402	30th July, 1928	0530		1730	2330
31	Jagdalpur	19°05'	82°02'	562	25th March, 1948 . . .	0530		1730	2330
32	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953	0530		1730	2330
33	Jamshedpur	22°49'	86°11'	144	23rd July, 1942	0530		1730	
34	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530		1730	2330
35	Jodhpur	26°18'	73°01'	229	15th October, 1934 . . .	0530*	1130	1730*	2330
36	Lucknow/Amausi	26°45'	80°53'	133	20th November, 1950 .	0530		1730	2330
37	Madras/Minambakkam	13°00'	80°11'	29	8th April, 1926	0530*	1130	1730*	2330
38	Mangalore/Bajpe	12°55'	74°53'	104	25th May, 1959	0530		1730	2330
39	Minicoy	08°18'	73°00'	15	14th April, 1941	0530		1730*	2330
40	Nagpur/Sonegaon	21°06'	79°03'	316	23rd April, 1943	0530*	1130	1730*	2330
41	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936 . . .	0530*	1130	1730*	2330
42	Poona	18°32'	73°51'	593	5th January, 1925 . . .	0530		1730	2330
43	Port Blair	11°40'	92°43'	95	29th October, 1945 . . .	0530*	1130	1730*	2330
44	Raipur	21°14'	81°39'	308	15th July, 1944	0530		1730	2330
45	Raxaul	26°59'	84°51'	83	28th October, 1957 . . .	0530		1730	
46	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530		1730	2330
47	Srinagar	34°06'	74°48'	1603	1st August, 1962	0530*		1730*	
48	Tiruchchirappalli	10°46'	78°43'	96	22nd June, 1936	0530		1730	2330
49	Trivandrum	08°29'	76°57'	73	8th December, 1928 . . .	0530*	1130	1730*	2330
50	Udaipur	24°35'	73°42'	587	24th June, 1947	0530		1730	2330
51	Vengurla	15°52'	73°38'	8	22nd November, 1941 . .	0530		1730	2330
52	Veraval	20°54'	70°22'	17	13th October, 1941 . . .	0530		1730	2330
53	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942	0530		1730	2330
54	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928 . .	0530*	1130	1730*	2330

*Radio wind ascents.

@Radiosonde ascents followed by optical theodolite.

†Naval Meteorological Office.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	AGARTALA												AHMADABAD															
	0530				1730				2330				0530*				1130				1730*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.3	0.2	095	30	0.9	0.8	321	30	0.5	0.5	045	30	1.3	0.8	036	30	2.0	1.9	055	30	1.6	0.5	357				
0.15 a.g.	30	2.7	1.2	048	30	2.9	2.3	326	30	3.1	2.0	358	30	5.9	4.1	028	29	3.4	2.4	040	30	3.2	1.1	350				
0.3 a.m.s.l.	30	3.0	1.7	015	30	2.7	2.1	329	30	3.0	2.3	344	30	5.7	3.7	025	29	3.5	2.3	045	30	3.4	1.1	325				
0.6 "	30	3.2	2.2	007	30	2.4	1.4	333	30	3.0	2.3	327	30	4.3	2.1	017	29	3.9	2.0	060	30	3.2	0.8	300				
0.9 "	29	3.4	1.7	348	30	2.7	1.3	320	30	3.4	2.2	320	30	4.3	0.8	353	29	3.7	1.0	056	30	2.9	0.4	275				
1.5 "	29	4.2	2.1	293	30	3.7	1.9	304	30	3.9	2.0	309	30	4.5	3.1	208	29	4.5	2.1	200	30	3.9	1.8	249				
2.1 "	29	5.3	3.3	292	30	5.5	3.7	298	30	5.5	3.0	289	30	6.5	4.8	214	29	6.2	4.3	215	30	5.6	3.1	246				
3.0 "	29	8.3	6.8	281	30	8.8	7.5	282	30	8.2	7.2	261	30	7.3	4.5	240	29	7.1	4.1	217	30	7.1	4.5	260				
3.6 "	29	10.7	9.8	277	30	10.8	10.1	276	6	10.1	9.6	280	30	8.7	6.0	262	27	7.5	4.7	253	30	8.5	6.7	264				
4.5 "	22	12.7	11.5	273	30	15.0	14.3	273	1	10.5	10.5	265	30	11.2	7.6	271	27	10.8	8.7	257	30	11.6	9.7	268				
5.4 "	17	15.5	14.2	277	29	19.3	18.4	273					30	13.3	11.0	269	24	12.5	10.8	274	30	15.1	13.0	273				
6.0 "	12	16.5	15.8	282	24	21.0	20.1	273					30	14.6	12.7	271	24	15.1	13.5	275	30	17.0	15.0	271				
7.2 "	1	22.0	22.0	285	10	21.9	20.5	278					30	21.0	19.3	272	21	21.3	19.1	277	30	21.3	18.2	270				
9.0 "					4	25.5	23.5	281					30	30.1	28.4	272	16	26.9	25.6	275	28	29.3	25.8	270				

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA											
	2330				0530*				1130				1730*				2330				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.9	0.1	060	30	0.7	0.2	239	30	0.6	0.3	264	30	0.6	0.4	321	30	0.3	0.0	093	30	0.7	0.2	115				
0.15 a.g.	30	4.3	1.6	018	30	4.1	0.3	257	30	2.4	0.4	255	30	3.2	2.2	326	30	4.3	0.9	086	30	5.7	0.9	041				
0.3 a.m.s.l.	30	4.2	1.4	025	30	4.1	0.3	260	30	2.7	0.4	260	30	3.3	2.2	325	30	4.3	0.8	074	30	2.7	0.6	076				
0.6 "	30	3.5	1.0	039	30	3.9	1.8	309	30	3.0	1.3	285	30	3.4	1.9	318	30	4.2	0.3	330	30	5.5	1.7	338				
0.9 "	30	3.3	0.7	053	30	4.2	2.3	317	30	3.3	2.1	290	30	3.7	2.2	308	30	4.2	2.1	292	30	5.5	1.8	330				
1.5 "	30	4.3	1.3	195	30	6.3	5.5	305	30	5.4	4.1	290	30	5.3	4.3	293	30	5.6	4.9	287	30	4.8	1.8	287				
2.1 "	30	5.4	1.9	204	30	8.2	7.4	302	30	7.3	6.4	295	30	7.1	6.5	295	27	7.3	6.6	290	30	6.1	2.9	293				
3.0 "	26	3.6	2.5	237	30	9.9	8.9	295	26	10.7	8.8	295	30	9.4	8.7	294	25	9.1	8.2	281	29	7.4	3.1	285				
3.6 "	3	4.0	3.5	300	30	10.7	9.7	292	26	11.0	10.0	285	30	10.3	9.8	285	2	10.0	9.7	260	27	7.0	3.9	280				
4.5 "					29	13.4	12.3	287	23	13.4	12.6	285	30	12.9	12.0	288					16	8.0	4.8	255				
5.4 "					29	16.1	15.0	284	20	17.1	15.3	290	29	16.6	15.6	286					5	7.1	5.3	215				
6.0 "					29	18.2	17.0	279	19	19.3	18.5	290	29	18.2	17.6	282					4	9.6	8.9	251				
7.2 "					29	24.3	22.9	279	16	23.0	22.4	285	28	22.7	22.0	281					2	18.0	17.9	254				
9.0 "					27	30.4	29.3	282	11	34.4	30.7	285	28	32.2	30.2	279												

TABLE IV--MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9 1885, Saka)

Station	AMBALA												ANANTAPUR											
	1130				1730				2330				0530				1730				2330			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.6	0.3	122	30	1.9	0.8	316	30	0.8	0.2	340	30	1.4	1.4	087	30	5.2	4.9	088	30	3.9	3.7	095
0.15 a.g.	30	4.0	0.9	133	30	4.6	1.7	313	30	5.9	3.2	356	30	4.7	4.6	089	30	7.3	7.2	086	30	7.2	7.1	100
0.3 a.m.s.l. . . .	30	2.3	0.7	125	30	3.0	0.9	322	30	2.5	1.1	349												
0.6 "	30	4.7	0.2	309	30	5.2	1.5	308	30	5.9	3.0	348	30	5.5	5.4	093	30	6.2	6.0	086	30	7.7	7.5	098
0.9 "	30	5.2	0.8	312	30	5.1	1.6	313	30	5.3	2.0	334	30	7.8	7.2	090	30	6.2	6.0	088	30	7.9	7.8	098
1.5 "	30	5.1	1.1	278	30	4.6	2.0	310	30	4.6	1.9	297	30	7.2	6.8	097	30	6.3	6.1	084	29	6.4	5.9	083
2.1 "	30	5.1	1.1	281	30	6.0	1.7	308	30	6.0	2.0	278	29	6.6	6.0	080	27	5.8	5.8	084	27	5.6	4.9	088
3.0 "	29	6.8	2.7	278	30	6.6	3.0	283	27	6.7	1.8	305	24	5.1	4.1	093	20	5.0	3.8	100	25	6.2	4.1	096
3.6 "	28	8.0	4.8	277	29	7.8	4.7	280	6	5.3	1.6	301	20	4.9	2.3	108	16	4.6	3.1	096	21	4.6	2.8	103
4.5 "	25	9.3	6.4	286	24	9.5	6.9	287	4	6.4	3.6	274	14	5.2	3.5	100	8	5.0	3.6	076	11	4.0	2.9	090
5.4 "	23	11.4	8.7	281	17	12.4	10.8	285	3	6.0	5.7	267	12	4.5	3.1	083	5	4.7	1.6	078	7	5.4	2.3	080
6.0 "	22	14.3	11.7	280	15	15.6	13.8	288					12	5.6	3.7	070	5	5.1	3.0	044	4	6.6	6.1	319
7.2 "	14	19.5	17.4	279	4	23.1	19.2	268					11	6.5	2.5	027	4	7.0	6.4	349				
9.0 "	6	30.9	29.6	262									6	5.9	4.2	005	3	8.8	7.9	330				

Station	ASANSOL												AURANGABAD/CHIKALTHAN											
	0530				1730				2330				0530				1730				2330			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	CALM			30	0.7	0.5	342	30	1.3	0.1	180	30	0.2	0.2	055	30	2.2	1.4	083	30	0.5	0.4	056
0.15 a.g.	29	3.6	1.3	359	30	3.4	2.3	330	30	4.8	1.9	018	30	4.7	3.9	073	30	3.6	2.8	095	30	6.2	5.4	100
0.3 a.m.s.l. . . .	29	3.6	1.1	006	30	3.7	2.4	331	30	4.9	2.1	017												
0.6 "	29	3.3	1.6	340	30	3.9	2.7	322	30	4.8	2.1	352												
0.9 "	29	4.0	3.2	319	30	4.2	3.2	317	30	4.1	2.9	314	30	6.5	5.5	128	30	3.8	2.9	097	30	7.4	6.2	100
1.5 "	29	6.9	6.3	316	30	5.9	5.1	307	30	6.9	6.3	302	29	5.3	4.1	120	30	3.5	2.7	100	30	6.3	5.8	106
2.1 "	29	8.6	7.9	312	29	9.6	8.9	310	30	10.4	8.3	307	28	4.7	1.5	099	29	3.6	2.4	087	30	4.7	3.0	111
3.0 "	23	11.0	10.4	307	26	10.2	9.6	298	26	11.5	10.9	301	26	5.1	2.1	348	26	3.7	0.8	353	26	4.1	0.4	316
3.6 "	19	11.4	10.7	294	25	12.2	11.6	291	22	13.3	12.5	295	15	5.8	2.3	346	21	4.7	1.4	289	20	4.8	1.8	295
4.5 "	12	15.2	13.4	289	25	17.7	16.4	285	12	16.6	16.0	287	7	4.4	2.4	346	18	6.1	3.5	280	2	2.3	1.8	234
5.4 "	8	15.9	14.5	292	23	21.8	20.9	282	3	21.5	20.7	279	7	9.4	4.4	318	17	7.6	5.6	297				
6.0 "	5	18.2	16.5	296	21	23.5	22.5	278	2	24.3	23.1	280	7	6.5	6.0	312	15	9.0	7.5	298				
7.2 "	1	31.0	31.0	325	11	29.1	27.2	283					3	11.2	10.7	301	6	13.7	11.8	286				
9.0 "					5	34.2	32.7	282									4	14.9	13.9	280				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	BAHRAICH												BANGALORE											
	0530				1130				1730				0530@				1130				1730@			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.2	0.1	085	30	0.7	0.2	064	30	0.5	0.2	274	30	1.9	1.9	085	30	3.7	3.7	089	30	3.4	3.3	085
0.15 a.g.	29	4.7	0.7	079	30	2.5	0.2	315	30	3.5	2.1	290	25	7.1	6.8	076	29	5.7	5.5	089	30	5.7	5.6	084
0.3 a.m.s.l.	29	4.8	0.3	174	30	2.6	0.4	298	30	3.6	2.1	289												
0.6 "	29	4.4	2.1	299	30	3.6	1.0	306	30	4.1	2.6	291												
0.9 "	29	4.6	2.8	300	30	4.3	2.2	304	30	4.5	3.3	293												
1.5 "	29	5.1	3.9	305	30	5.6	3.8	300	30	5.9	4.4	300	25	8.6	8.4	079	28	6.8	6.7	087	30	6.7	6.5	085
2.1 "	29	6.8	5.7	298	29	6.6	5.8	300	30	7.1	6.2	300	25	7.1	6.6	087	23	7.7	7.4	090	30	6.9	6.6	085
3.0 "	27	9.9	9.1	300	27	9.5	8.6	293	30	9.5	9.1	294	24	6.0	5.3	095	17	6.4	5.7	091	22	5.3	4.8	092
3.6 "	25	11.3	10.4	298	26	10.8	10.2	294	29	10.2	10.0	296	23	5.5	4.9	100	12	4.8	4.4	087	21	5.2	4.5	098
4.5 "	17	12.4	12.0	290	24	13.5	12.8	291	28	12.9	12.3	295	21	5.2	4.4	102	12	5.0	4.4	094	17	5.3	4.7	094
5.4 "	9	15.1	14.8	293	23	16.6	15.6	290	24	16.2	15.6	291	18	6.0	5.2	084	12	6.2	5.1	086	16	5.7	4.5	085
6.0 "	4	19.2	19.2	296	22	19.8	19.1	286	21	18.7	18.1	292	17	7.4	5.3	080	12	7.0	5.6	073	16	6.1	4.8	074
7.2 "					22	26.3	16.5	286	13	21.5	20.3	281	16	6.8	5.1	055	9	5.3	3.8	060	12	5.8	2.7	062
9.0 "					10	34.0	33.5	286	4	31.5	31.5	285	14	5.7	3.2	325	7	7.1	4.7	322	8	5.7	2.3	280

Station	BANGALORE				BAREILLY				BEGAMPET															
	2330				0530				1730				0530				1730				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.7	2.6	093	30	1.2	0.3	066	30	0.9	0.4	298	30	0.6	0.5	111	30	2.3	2.0	085	30	1.3	1.0	080
0.15 a.g.	25	7.8	7.7	090	30	4.6	0.7	103	30	3.2	1.3	299	29	4.3	3.8	113	30	4.6	4.2	086	30	6.5	5.7	100
0.3 a.m.s.l.					30	4.4	0.9	082	30	3.0	1.1	299												
0.6 "					30	4.9	1.2	114	30	4.1	1.9	287	29	3.0	2.4	107	30	4.0	3.7	088	30	4.4	3.9	095
0.9 "					30	4.8	1.0	041	30	4.5	2.3	285	29	5.8	5.3	102	30	4.5	4.1	087	30	6.7	6.0	100
1.5 "	24	8.5	8.3	085	30	5.7	3.8	292	30	5.3	3.7	281	29	5.5	4.7	080	30	4.7	4.3	082	30	5.7	5.2	087
2.1 "	24	6.9	6.2	086	29	6.5	5.4	294	30	6.1	5.1	288	29	5.6	3.9	051	30	4.5	3.5	063	30	5.3	4.0	070
3.0 "	21	7.8	7.1	103	28	8.3	7.0	294	29	15.2	7.4	290	29	4.4	1.5	032	30	4.4	1.0	039	30	4.3	0.6	350
3.6 "	16	6.2	5.6	102	26	9.4	8.1	296	28	9.4	8.3	290	28	3.9	0.2	334	29	4.7	0.7	275	22	4.3	0.3	227
4.5 "	9	5.3	4.7	091	18	10.3	9.6	294	26	11.3	10.3	290	28	4.6	0.7	282	26	4.7	1.3	285	8	4.1	1.5	306
5.4 "	3	7.2	6.3	052	11	11.2	10.4	289	26	14.1	12.5	292	26	5.7	1.3	301	22	5.4	2.1	324	4	6.4	2.1	259
6.0 "	2	7.7	6.8	049	4	12.5	11.9	272	24	17.3	16.0	285	25	6.6	2.0	281	21	6.1	3.5	311	4	8.4	1.8	246
7.2 "	1	7.5	7.5	345	2	18.5	18.5	287	12	21.0	19.6	287	18	7.6	4.7	302	14	7.5	5.2	313	2	8.0	7.9	266
9.0 "													8	7.9	6.9	278	11	10.9	9.5	300				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885, Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR			
	0530				1730				0530				1730				2330				0530			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.4	0.1	142	30	0.8	0.1	292	30	1.5	0.3	132	30	2.0	0.5	243	30	1.5	0.4	066	30	1.4	0.9	358
0.15 a. g.	29	3.1	0.5	179	30	3.1	2.0	305	29	5.1	1.3	121	30	3.4	0.6	269	29	5.5	1.6	083	30	3.1	1.2	360
0.3 a. m. s. l.	29	3.0	0.2	023	30	3.5	2.4	301													30	2.8	0.4	040
0.6 "	29	2.8	0.7	128	30	3.5	2.6	295	29	4.5	1.5	129	30	3.0	0.4	271	29	5.1	1.4	087	30	3.0	1.4	039
0.9 "	29	3.1	1.4	307	30	3.9	3.1	291	29	4.4	1.3	192	30	3.7	0.9	279	29	4.7	0.9	117	30	3.2	2.4	030
1.5 "	28	5.0	3.4	308	30	5.9	4.9	296	29	3.8	1.6	255	30	3.6	1.2	265	28	3.7	0.9	225	29	6.0	5.0	026
2.1 "	28	6.9	5.4	304	30	7.5	6.1	295	29	5.2	3.2	274	30	4.2	2.3	272	28	5.2	2.5	268	28	5.4	4.3	010
5.0 "	25	9.9	9.3	305	29	9.5	8.8	294	28	5.8	4.0	288	26	4.9	4.0	281	28	6.5	4.8	281	27	4.7	3.3	318
3.6 "	17	10.1	9.5	298	26	11.6	11.0	292	26	7.0	5.4	292	23	6.9	6.1	248	10	7.3	6.0	256	27	5.6	4.0	307
4.5 "	10	11.3	10.2	299	22	14.6	14.3	287	21	9.8	8.4	294	17	10.4	8.9	286					24	6.2	5.1	275
5.4 "	7	11.6	10.7	298	18	17.0	16.5	287	15	12.0	11.2	294	14	13.4	11.7	289					16	9.9	8.6	282
6.0 "	4	13.5	12.6	308	11	19.2	18.9	281	12	14.5	13.4	293	12	14.2	12.5	294					12	11.3	11.1	283
7.2 "	1	19.5	19.5	295	1	18.5	18.5	275	10	21.6	20.3	283	5	19.6	19.2	288					3	14.8	14.7	287
9.0 "									6	25.9	24.8	290									2	21.3	21.0	276

Station	BHUBANESHWAR								BHUJ/RUDRAMATA												BIKANER			
	1730				2330				0530				1730				2330				0530			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.5	0.5	072	30	1.1	0.4	194	30	0.5	0.4	058	30	2.5	1.1	021	30	1.7	1.1	325	30	0.8	0.2	213
0.15 a. g.	30	3.0	1.4	085	30	4.3	2.9	163	30	5.1	3.0	356	30	3.9	1.1	016	30	5.9	3.5	349	30	5.6	0.6	053
0.3 a. m. s. l.	30	3.0	1.6	073	30	4.7	2.3	165	30	5.9	3.6	010	29	4.0	1.2	022	30	6.3	4.0	352	30	4.6	0.5	102
0.6 "	30	2.5	1.3	048	30	3.1	0.7	124	30	6.5	3.3	010	29	3.8	1.3	017	30	6.5	3.7	359	30	5.6	0.5	268
0.9 "	30	2.3	1.5	026	30	2.8	1.4	360	30	4.6	1.1	015	30	3.6	1.2	006	30	5.0	2.1	008	30	5.3	1.1	265
1.5 "	30	4.3	3.3	007	30	5.1	3.5	012	30	3.9	2.1	205	30	3.3	0.7	289	30	4.3	1.2	102	30	4.9	2.7	276
2.1 "	30	5.4	4.7	360	29	5.4	3.5	007	30	5.3	2.8	219	30	3.7	1.6	233	30	5.5	3.1	178	30	5.5	4.1	275
3.0 "	28	5.8	4.0	311	27	5.1	3.3	324	28	4.9	2.9	274	28	5.7	3.7	261	28	5.0	2.4	249	29	6.7	5.1	277
3.6 "	24	6.9	5.8	295	7	5.4	3.1	339	21	5.9	4.1	269	27	6.7	5.4	265	25	6.1	4.5	270	25	7.8	6.3	277
4.5 "	19	8.5	7.3	291	2	8.0	4.5	302	14	8.5	6.7	270	26	9.3	8.1	272	3	8.2	6.0	282	24	10.4	9.2	276
5.4 "	16	9.8	8.0	284					4	8.9	6.5	270	24	11.8	10.6	272	3	6.3	4.4	297	21	14.8	13.6	275
6.0 "	11	11.9	10.9	279					2	9.3	9.3	267	24	13.8	12.7	271	3	7.0	6.3	281	20	16.7	15.6	272
7.2 "	11	13.8	13.3	290									23	19.4	18.2	274	1	12.5	12.5	265	13	18.6	17.3	280
9.0 "	3	21.5	18.9	281									11	23.0	21.4	276					5	23.6	22.4	247

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station Time in I. S. T. Ht. in Km.	BIKANER								BOMBAY/SANTACRUZ																		
	1730				2330				0530*				1130				1730*				2330						
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	0.8	0.3	322	30	1.2	0.4	038	30	0.8	0.4	070	30	1.4	1.2	093	30	4.0	2.8	322	30	1.1	0.7	043			
0.15 a.g. . . .	30	3.7	2.1	334	30	6.4	3.8	037	30	5.0	3.9	065	30	3.5	3.0	083	30	5.9	4.5	333	30	4.2	3.4	009			
0.3 a. m. s. l. . . .	30	3.2	2.1	343	30	5.4	2.8	033	30	4.4	3.2	080	30	3.7	3.2	095	30	4.5	3.4	336	30	4.6	3.7	009			
0.6 „ . . .	30	4.3	2.9	324	30	5.7	2.8	042	30	3.9	2.5	095	30	4.3	3.7	100	30	3.5	2.0	003	30	4.8	3.5	026			
0.9 „ . . .	30	4.4	1.7	322	30	5.0	1.2	017	30	3.9	2.5	096	30	4.4	3.5	111	30	3.3	1.5	050	30	4.8	3.2	053			
1.5 „ . . .	30	4.4	1.8	298	30	4.9	2.4	253	30	4.2	2.8	132	30	4.5	2.5	121	30	3.9	2.6	104	30	5.4	4.2	101			
2.1 „ . . .	30	4.7	3.0	280	30	5.8	4.5	261	30	4.7	3.1	141	30	4.7	1.8	148	30	5.5	3.6	108	29	6.2	5.2	117			
3.0 „ . . .	28	6.4	5.1	295	28	6.2	5.3	278	30	5.3	1.8	210	30	5.5	0.5	222	30	5.5	1.7	101	29	4.9	1.8	148			
3.6 „ . . .	27	8.2	7.2	280	12	6.3	5.4	278	30	5.8	1.9	253	29	5.9	1.7	219	30	5.0	0.7	166	26	4.9	1.7	228			
4.5 „ . . .	25	11.2	10.0	2.9					30	6.2	2.6	277	28	5.7	1.6	243	30	6.4	1.9	247	20	5.6	1.9	313			
5.4 „ . . .	22	16.2	15.0	2.7					30	7.1	3.7	273	28	6.7	3.5	264	30	7.6	4.6	259	12	5.7	1.4	308			
6.0 „ . . .	16	17.3	16.3	282					30	7.5	4.2	272	27	7.8	5.0	276	30	8.5	5.1	273	11	7.3	3.7	278			
7.2 „ . . .	6	21.9	21.6	230					30	9.8	7.2	280	26	11.1	8.6	279	30	11.2	8.5	277	3	11.0	9.6	268			
9.0 „ . . .									30	12.9	10.6	280	21	14.8	13.1	276	29	13.6	11.9	277							

Station Time in I. S. T. Ht. in Km.	CALCUTTA/DUM DUM																COCHIN/WILLINGDON										
	0530*				1130				1730*				2330				0530				1730						
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	0.2	0.1	017	30	0.9	0.7	352	30	0.2	0.1	317	30	0.4	0.2	017	30	1.1	1.0	058	30	2.0	1.5	266			
0.15 a.g. . . .	30	3.3	1.8	358	30	2.4	1.2	344	30	3.3	2.8	336	30	3.4	2.2	004	29	2.8	2.3	059	24	3.4	2.5	272			
0.3 a. m. s. l. . . .	30	3.2	1.7	359	30	2.8	2.1	342	30	3.3	2.5	340	30	3.2	2.0	356	29	2.5	1.8	061	24	3.0	1.8	231			
0.6 „ . . .	30	3.2	1.9	355	30	3.3	2.5	338	30	3.2	2.3	343	30	3.0	2.0	340	29	2.3	1.9	066	24	2.9	1.8	032			
0.9 „ . . .	30	3.7	2.8	345	30	4.0	3.2	333	30	3.5	2.8	342	30	3.3	2.5	330	29	3.4	3.0	076	24	4.1	3.8	058			
1.5 „ . . .	30	5.4	4.6	334	30	5.6	3.2	335	30	5.2	4.3	334	30	4.8	4.2	321	29	4.9	4.3	084	24	6.4	5.9	088			
2.1 „ . . .	30	6.1	5.4	322	26	6.8	6.1	325	30	7.0	6.4	320	29	6.6	5.9	318	28	5.5	4.8	097	23	6.2	5.3	087			
3.0 „ . . .	30	7.5	6.9	305	24	7.5	7.0	301	30	7.8	7.2	298	20	7.2	5.7	298	22	5.7	5.2	207	17	5.8	5.2	096			
3.6 „ . . .	30	9.3	8.5	291	22	8.1	7.5	292	30	9.8	9.2	288	5	8.1	8.0	270	14	5.6	5.2	098	13	6.1	5.7	094			
4.5 „ . . .	30	12.1	11.4	279	18	11.6	12.2	278	30	12.6	11.9	287	1	8.0	8.0	290	4	6.4	5.5	083	6	6.7	6.4	096			
5.4 „ . . .	30	15.8	15.0	279	16	14.3	13.1	284	30	15.2	14.7	280									3	5.5	5.2	095			
6.0 „ . . .	30	17.6	16.7	280	16	15.5	15.0	279	29	18.3	17.7	281									1	8.5	8.5	095			
7.2 „ . . .	30	22.4	20.0	272	11	20.4	19.5	282	27	20.1	19.8	278															
9.0 „ . . .	28	27.9	27.2	278	9	22.6	22.0	276	25	26.5	25.1	279															

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	GWALIOR																IMPHAL/TULIHAI							
	0530				1130				1730				2330				0530				1130			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.6	0.2	216	30	1.2	0.3	214	30	1.0	0.5	344	30	0.7	0.3	194	30 CALM				30	0.6	0.5	176
0.15 a.g.	28	4.3	1.1	190	29	2.5	0.7	239	30	3.2	1.6	350	30	4.6	1.3	106	15 1.9 1.5 059				30	1.4	0.9	192
0.3 a.m.s.l.	28	3.6	1.1	193	29	2.5	0.7	254	30	2.9	1.5	348	30	3.7	0.9	116					30			
0.6 "	28	4.9	0.3	256	29	3.2	0.7	238	30	3.6	1.7	339	30	4.7	0.3	103					30			
0.9 "	28	4.4	1.3	288	29	4.1	1.5	266	30	3.5	1.6	331	30	4.1	1.0	274	15 2.0 1.6 054				30	1.3	0.7	180
1.5 "	27	5.6	4.2	291	29	4.9	3.2	284	30	4.1	2.5	296	29	5.1	3.5	275	15 2.5 1.0 026				30	2.1	1.1	167
2.1 "	24	7.7	6.3	295	27	6.7	5.7	291	29	6.4	5.7	280	26	6.8	6.0	279	14 4.0 1.4 216				30	3.7	1.7	224
3.0 "	22	11.0	9.1	287	26	9.6	8.1	287	26	8.9	7.9	283	22	9.2	7.9	286	11 7.0 5.9 253				30	6.9	5.0	264
3.6 "	21	11.7	9.4	293	24	10.9	9.3	284	25	10.2	9.2	281	8	9.8	8.8	268	8 7.4 7.3 267				28	8.6	8.0	264
4.5 "	14	13.0	11.3	300	19	13.4	12.4	293	23	13.9	12.8	289					3 17.5 17.3 276				20	13.4	8.4	267
5.4 "	13	15.5	14.8	299	17	17.3	16.3	289	21	17.1	16.0	288									7	19.7	19.4	279
6.0 "	11	17.9	16.7	293	16	18.3	17.2	290	21	18.3	17.0	282									2	19.7	19.7	275
7.2 "	6	23.2	22.7	301	12	23.3	22.3	284	15	22.7	21.2	284									1	29.0	29.0	270
9.0 "	1	28.0	28.0	310	1	29.0	29.0	280	2	23.0	22.3	308												

Station	IMPHAL/TULIHAI								JABALPUR												JAGDALPUR			
	1730				2330				0530				1730				2330				0530			
Time in I. S. T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	1.3	0.6	244	30	0.3	0.2	036	30	5.5	0.5	157	30	0.8	0.5	358	30	0.6	0.4	140	30	0.1	0.0	040
0.15 a.g.	30	3.0	1.6	228	30	1.8	0.9	023	29	4.1	2.4	182	30	3.2	1.6	341	30	5.7	1.9	135	29	2.2	1.5	075
0.3 a.m.s.l.																								
0.6 "									29 4.5 2.3 176				30 3.3 1.7 335				30 6.1 1.7 130				29 1.1 0.7 066			
0.9 "	30	3.0	1.5	230	30	2.1	1.5	034	29	4.8	1.4	214	30	3.5	2.0	324	30	5.2	0.7	123	29	3.3	2.3	074
1.5 "	30	2.4	1.4	214	30	1.9	0.2	210	29	5.2	2.5	293	30	4.3	2.4	308	30	4.1	1.6	285	29	4.6	4.0	056
2.1 "	30	3.5	2.0	243	30	3.4	1.7	230	29	5.6	4.3	314	30	4.7	3.1	304	30	5.3	3.3	290	29	5.2	4.2	040
3.0 "	27	7.1	6.4	267	20	7.3	5.3	257	27	7.0	5.4	314	29	5.8	4.6	285	29	6.6	5.1	299	27	5.1	2.9	355
3.6 "	18	9.2	7.7	277	9	7.3	6.1	268	25	7.5	6.4	300	26	7.7	6.6	288	20	8.7	7.6	294	25	5.0	2.5	306
4.5 "	15	15.2	14.7	275	2	15.0	13.9	260	21	10.1	8.7	285	24	11.9	10.1	283	4	12.7	12.3	275	23	6.1	3.9	280
5.4 "	10	19.7	19.3	282					17 13.6 12.0 271				18 15.8 14.1 282								21	8.1	5.5	278
6.0 "	5	18.9	18.8	284					12 15.2 13.6 277				14 17.1 15.3 280								20	9.0	7.4	278
7.2 "									1 19.0 19.0 295				7 16.9 16.1 297								16	12.3	10.2	293
9.0 "													2 23.5 23.5 281								10	13.5	12.7	284

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER												JAMSHEDPUR							
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.7	0.5	040	30	0.3	0.2	074	30	0.9	0.4	026	30	1.7	0.8	292	30	1.0	0.7	045	30	0.2	0.2	315				
0.15 a.g.	30	3.0	2.5	032	30	5.2	3.7	081	30	4.9	2.1	060	30	4.1	1.8	294	30	5.8	2.4	048	30	2.4	1.3	290				
0.3 a. m. s. l.																					30	2.4	1.0	293				
0.6 "	30	2.1	1.7	032	30	3.1	2.2	086	30	4.9	2.0	072	30	4.0	2.3	297	30	6.1	2.3	051	30	2.9	0.8	327				
0.9 "	30	3.5	3.0	035	30	5.5	4.2	073	30	4.7	0.2	053	30	4.4	2.2	303	30	5.4	1.6	047	30	3.1	2.0	322				
1.5 "	30	3.5	3.0	040	30	4.2	3.3	060	30	5.4	3.6	289	30	4.4	2.2	298	30	4.2	1.8	271	30	6.1	5.5	324				
2.1 "	30	4.0	2.6	056	29	4.0	2.7	054	30	6.5	4.6	282	29	5.5	4.3	285	30	6.4	4.8	267	28	8.0	7.3	324				
3.0 "	29	4.3	2.1	347	28	4.7	2.4	334	29	8.4	7.0	284	28	8.1	7.0	286	28	8.2	7.1	271	22	9.7	8.9	304				
3.6 "	29	5.1	2.9	313	10	4.0	3.2	294	14	7.4	6.1	294	26	10.8	9.6	272	21	9.5	8.3	279	12	10.5	10.3	284				
4.5 "	29	6.9	4.7	290	2	7.0	6.3	280	2	10.0	8.7	272	22	14.3	13.1	278	2	9.7	7.5	261	4	12.3	11.3	270				
5.4 "	25	8.0	5.9	278								20	17.1	15.7	279					1	13.5	13.5	285					
6.0 "	25	9.3	7.7	279								19	19.7	18.1	280													
7.2 "	18	12.2	10.9	290								13	24.2	22.5	276													
9.0 "	4	11.1	10.5	293								4	31.0	29.0	281													

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR											
	1730				0530				1730				2330				0530*				1130			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.3	0.3	338	30	1.3	1.3	029	30	0.8	0.6	214	30	0.6	0.1	039	30	1.8	1.5	037	30	3.4	1.5	049
0.15 a.g.	30	2.3	1.2	354	30	3.5	3.0	051	30	2.4	1.4	233	30	2.7	0.7	193	28	5.9	3.4	352	30	3.8	0.6	055
0.3 a. m. s. l.	30	2.3	1.2	347	30	3.4	3.2	038	30	2.5	1.4	232	30	2.4	0.5	131	28	3.8	1.9	002	30	3.3	0.9	025
0.6 "	30	2.5	1.4	342	30	2.9	0.4	345	30	2.2	1.3	258	30	2.8	0.9	243	28	5.7	2.0	350	30	3.7	0.2	015
0.9 "	30	2.7	1.7	322	30	2.9	0.9	313	30	2.1	1.4	277	30	3.0	1.2	282	28	5.7	1.3	310	30	4.7	1.1	275
1.5 "	30	5.1	4.4	317	30	4.0	2.5	328	30	3.4	2.4	332	30	3.7	2.0	333	27	5.1	2.8	269	30	5.8	3.2	249
2.1 "	27	7.7	7.0	314	30	5.9	4.9	342	30	5.8	4.7	350	30	4.6	3.3	347	27	5.3	4.2	258	30	6.0	3.8	249
3.0 "	20	8.2	7.5	303	30	6.5	5.3	332	29	5.7	4.9	318	29	6.1	5.5	321	27	7.2	5.5	254	27	7.0	4.8	258
3.6 "	16	10.4	9.7	286	25	6.8	5.5	302	28	7.7	6.8	304	9	6.6	6.2	273	25	8.3	6.4	267	24	9.6	7.7	263
4.5 "	9	15.4	13.9	285	22	9.7	8.1	281	27	12.0	10.9	295					25	11.6	10.1	270	20	12.1	10.4	279
5.4 "	6	18.7	17.8	284	12	13.0	11.6	269	22	14.6	13.1	290					25	16.1	14.3	266	18	16.0	14.2	274
6.0 "	5	20.2	18.6	274	6	14.9	13.5	261	20	16.8	1.45	288					25	20.2	18.4	270	14	17.9	15.9	282
7.2 "									9	15.8	15.5	295					24	25.4	23.3	269	12	23.6	20.0	279
9.0 "									1	13.0	13.0	300					16	28.1	26.7	281	4	31.7	30.7	271

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MADRAS/MINAM-BAKKAM							
	1730*				2330				0530				1730				2330				0530*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.1	1.3	051	30	2.1	0.8	030	30	1.1	0.3	103	30	1.5	0.4	325	30	1.2	0.4	031	30	3.6	3.4	033				
0.15 a. g. . . .	29	4.8	1.9	354	30	9.9	2.3	028	30	4.1	0.4	141	29	3.4	1.2	334	29	4.9	0.9	045	30	6.3	5.9	038				
0.3 a. m. s. l. . .	29	4.8	2.7	011	30	7.6	2.0	012	30	4.3	0.3	167	29	3.6	1.3	327	29	4.9	0.7	039	30	6.4	6.2	045				
0.6 ,,	29	4.4	1.7	343	30	9.8	2.4	047	30	4.1	1.1	302	29	3.7	1.9	310	29	4.0	1.1	062	30	6.8	6.6	059				
0.9 ,,	29	3.7	1.8	322	30	8.0	1.6	021	30	4.2	2.5	293	30	3.8	2.3	293	29	4.0	2.3	293	30	6.7	6.4	066				
1.5 ,,	29	3.8	1.7	296	30	5.1	0.7	271	30	5.9	4.8	292	30	5.7	4.4	290	29	5.1	4.3	298	30	7.3	6.8	068				
2.1 ,,	29	5.3	3.2	275	28	5.1	1.9	265	30	8.4	6.7	290	30	7.5	6.1	292	29	7.4	6.3	291	30	7.2	6.8	075				
3.0 ,,	29	7.0	5.1	257	27	6.2	3.4	252	23	9.7	8.4	294	29	10.5	9.8	289	24	7.3	5.9	288	30	6.1	5.0	099				
3.6 ,,	29	8.0	6.8	271	18	6.3	4.3	249	6	10.1	8.3	301	29	12.9	12.3	284	6	8.6	7.8	273	30	5.6	4.7	110				
4.5 ,,	29	11.1	9.5	272	4	10.5	8.9	295	3	11.5	10.3	275	27	16.5	15.9	284	2	11.5	11.3	266	30	5.5	4.7	114				
5.4 ,,	29	15.5	14.2	275	1	13.0	13.0	295					23	18.5	17.8	282					30	5.8	4.5	106				
6.0 ,,	27	18.4	16.2	272	1	17.5	17.5	300					19	20.8	19.2	287					30	5.9	3.9	097				
7.2 ,,	27	24.2	22.8	276									14	26.0	23.9	276					29	6.1	2.7	089				
9.0 ,,	21	30.3	28.6	279									2	35.0	29.0	285					29	6.1	1.4	243				

Station	MADRAS/MINAMBAKKAM								MANGALORE/BAJPE																			
	1130				1730*				2330				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	3.6	3.2	050	30	5.1	4.7	045	30	2.3	1.8	038	30	1.3	1.2	087	30	2.5	2.3	288	30	0.8	0.1	065				
0.15 a.g.	29	6.0	5.6	050	30	7.0	6.7	050	27	6.0	5.5	051	30	5.2	4.5	087	30	4.1	3.1	288	30	3.7	2.0	320				
0.3 a. m. s. l. . .	29	6.0	5.7	053	30	7.1	6.7	048	27	7.1	6.8	054	30	5.6	4.8	085	30	3.9	2.8	297	30	3.5	1.9	324				
0.6 ,,	29	6.5	6.2	054	30	7.3	6.9	053	26	7.7	7.4	057	30	7.1	6.6	089	30	2.3	0.5	047	30	3.5	1.4	359				
0.9 ,,	28	7.2	7.0	056	30	7.3	6.9	057	25	7.7	7.5	060	30	7.4	7.3	095	30	3.4	3.1	090	30	4.2	2.9	067				
1.5 ,,	21	7.4	7.2	061	30	6.5	6.1	065	24	7.6	7.1	064	30	7.6	7.3	096	30	7.1	6.9	086	30	8.3	8.0	093				
2.1 ,,	14	6.9	6.3	072	30	6.1	5.2	080	19	7.5	6.8	066	30	6.3	5.5	097	27	8.3	7.9	091	29	9.3	8.9	092				
3.0 ,,	6	8.2	7.2	073	30	6.0	5.4	091	14	7.2	6.4	087	28	6.0	5.3	107	25	5.9	4.9	095	25	7.6	6.2	103				
3.6 ,,	5	6.9	6.3	084	30	5.9	5.2	098	8	6.1	4.7	169	26	5.9	5.2	110	23	5.9	5.3	091	17	5.6	4.0	109				
4.5 ,,	3	7.2	7.1	097	30	5.4	4.7	106	1	5.5	5.5	100	23	6.0	5.1	111	22	6.0	5.3	093	10	6.2	4.8	107				
5.4 ,,	3	6.3	6.3	092	30	5.6	4.1	098					20	6.8	5.2	103	21	6.9	5.4	092	5	5.9	4.1	092				
6.0 ,,	2	7.3	6.9	071	30	6.3	3.7	092					16	7.4	6.1	075	20	7.5	6.2	083	5	6.4	4.9	080				
7.2 ,,	1	7.5	7.5	120	30	5.6	1.9	074					8	6.1	4.4	076	16	8.5	7.0	047								
9.0 ,,	1	7.0	7.0	100	30	6.2	1.7	284					4	6.4	5.7	331	12	6.1	3.2	340								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	MINICOY												NAGPUR/SONEGAON											
	0530				1130				1730*				2330				0530*				1130			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	1.5	0.7	122	30	2.3	1.1	104	30	1.3	0.4	127	30	1.7	1.1	121	30	0.2	0.2	343	30	0.6	0.2	052
0.15 a. g. . .	29	3.5	1.2	109	29	4.2	2.0	101	30	2.8	0.6	105	28	3.6	2.5	099	30	2.8	0.1	306	30	1.9	0.7	027
0.3 a. m. s. l. . .	29	4.0	1.7	105	29	4.6	2.2	078	30	3.3	1.1	081	28	3.5	2.5	094								
0.6 " . . .	28	4.5	2.7	097	29	4.9	2.9	103	30	3.9	2.1	076	27	4.1	3.2	092	30	2.7	0.5	135	30	2.0	0.7	084
0.9 " . . .	28	5.3	4.3	096	29	5.6	4.2	102	30	4.3	3.1	083	27	4.8	4.0	093	30	2.7	1.1	135	30	2.1	0.7	116
1.5 " . . .	27	6.2	5.2	092	27	6.6	5.7	097	30	4.8	3.5	093	27	5.5	4.8	101	30	2.9	1.1	070	30	2.6	1.2	048
2.1 " . . .	26	5.6	4.9	089	25	5.7	4.9	098	30	5.1	3.7	095	27	5.3	4.7	096	30	3.4	2.3	004	30	3.4	2.7	016
3.0 " . . .	26	5.5	4.7	089	19	5.5	4.6	100	30	5.1	3.6	090	24	5.7	4.8	089	30	4.1	2.3	333	29	4.5	2.1	314
3.6 " . . .	24	5.8	4.9	091	19	5.1	4.6	103	30	6.3	4.5	089	23	6.5	5.5	095	30	5.3	3.0	304	28	6.1	3.3	284
4.5 " . . .	22	6.2	5.5	093	15	7.0	5.7	096	30	7.1	5.8	094	17	6.2	5.4	100	30	6.8	5.1	280	25	8.7	6.7	280
5.4 " . . .	20	6.3	5.7	102	12	6.5	5.9	091	30	7.4	6.1	085	6	5.2	4.4	101	30	9.3	7.4	275	24	10.8	8.9	282
6.0 " . . .	18	6.4	5.7	094	12	6.1	5.3	092	30	7.5	6.5	087	4	4.0	3.3	113	30	10.7	8.5	280	24	13.4	11.3	280
7.2 " . . .	12	6.5	5.7	095	9	6.3	4.6	077	29	7.2	6.2	095					30	14.7	12.8	274	22	17.2	15.8	277
9.0 " . . .	3	5.7	5.6	098	4	5.0	4.6	107	29	6.7	5.3	107					30	18.4	16.6	276	19	23.2	21.9	285
Station	NAGPUR/SONEGAON								NEW DELHI/SAFDARJUNG															
Time in I.S.T.	1730*				2330				0530*				1130				1730*				2330			
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	0.2	0.2	057	30	0.4	0.2	260	30	1.9	0.4	071	30	2.2	0.7	285	30	1.9	0.6	338	30	0.6	0.1	326
0.15 a. g. . .	30	2.2	1.0	063	30	4.3	3.0	153	30	6.1	1.1	057	29	3.6	0.6	335	30	4.5	2.1	359	30	6.1	1.6	049
0.3 a. m. s. l. . .									30	5.2	1.0	040	29	3.4	0.5	315	30	2.7	1.1	958	30	5.0	1.4	055
0.6 " . . .	29	2.2	1.2	063	30	4.5	3.0	143	30	6.1	0.5	041	29	4.5	0.9	290	30	4.3	2.0	351	30	6.0	1.9	047
0.9 " . . .	29	2.1	1.1	083	30	3.6	2.1	129	30	6.1	1.0	297	29	5.1	1.5	280	30	4.4	1.5	333	30	5.2	0.9	287
1.5 " . . .	29	2.5	1.2	039	30	3.3	1.4	059	30	5.9	3.9	287	29	5.8	3.0	278	30	4.8	2.1	293	30	5.4	3.2	281
2.1 " . . .	29	3.2	2.4	014	30	3.9	2.3	017	30	6.8	5.2	291	29	6.7	4.6	296	30	5.7	3.8	292	28	7.0	5.3	272
3.0 " . . .	30	3.8	2.4	330	28	4.2	2.6	336	30	8.7	6.9	288	29	8.0	6.5	283	30	7.9	6.5	285	23	7.3	5.7	271
3.6 " . . .	30	5.1	3.8	290	18	5.6	3.1	305	30	9.5	8.3	284	28	10.0	7.7	280	30	9.3	8.1	281	3	5.2	4.6	300
4.5 " . . .	29	7.4	5.6	278	3	9.3	8.0	283	30	11.2	9.3	282	26	13.9	12.0	285	30	11.7	10.2	281	1	2.0	2.0	215
5.4 " . . .	30	10.1	8.6	273					30	14.7	13.6	278	25	16.3	14.1	282	30	14.1	12.3	282	1	7.0	7.0	250
6.0 " . . .	30	12.0	10.2	276					30	18.6	17.1	280	22	19.7	18.2	282	30	16.6	15.1	278				
7.2 " . . .	30	15.2	14.0	279					30	23.8	22.5	278	15	24.7	23.2	276	29	20.6	18.3	278				
9.0 " . . .	29	17.4	15.8	272					30	34.8	30.7	278	4	26.5	26.4	257	30	29.5	27.7	278				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	SILIGURI/BAGHDOGRA												SRINAGAR								TIRUCHCHIRAPPALLI							
	0530				1730				2330				0530*				1730*				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	0.9	0.7	030	30	0.8	0.1	110	30	1.4	1.2	009	28	0.2	0.1	360	28	0.8	0.8	320	30	2.9	2.6	014				
0.15 a.g.	30	3.0	2.3	057	30	2.2	0.2	188	30	2.6	2.2	065	28	1.5	0.6	107	27	2.0	0.7	340	27	6.9	6.7	023				
0.3 a.m.s.l.	30	3.0	2.3	075	30	2.2	0.1	213	30	2.6	1.9	076								27	7.7	7.5	029					
0.6 "	30	3.0	2.4	093	30	2.3	0.5	228	30	2.1	0.7	113								27	8.6	8.3	047					
0.9 "	30	2.7	2.1	088	30	2.4	0.9	232	30	2.5	0.3	155								26	8.5	8.1	055					
1.5 "	29	2.7	1.4	103	29	2.3	0.7	256	29	2.7	0.2	227								22	7.6	7.2	059					
2.1 "	25	4.1	0.9	181	27	3.3	1.3	292	25	3.0	0.6	289	28	1.3	0.3	160	27	1.5	0.3	299	21	6.1	5.5	071				
3.0 "	21	6.8	2.3	297	27	5.9	3.5	297	18	5.4	4.4	284	28	2.0	0.3	118	27	2.9	1.6	135	18	6.0	5.5	094				
3.6 "	20	8.4	5.3	286	25	7.7	5.8	289	5	10.5	10.4	284	28	3.5	2.3	153	27	4.1	2.1	163	18	6.2	5.5	095				
4.5 "	18	12.4	10.5	283	19	13.3	12.5	287					28	5.2	2.6	180	27	5.5	2.8	207	16	6.2	5.7	098				
5.4 "	14	15.3	13.7	287	14	16.1	15.4	284					28	8.0	4.5	245	27	7.7	5.0	244	13	6.8	6.1	093				
6.0 "	10	18.1	17.2	287	12	18.3	17.6	283					28	9.4	6.3	258	27	8.2	6.3	258	10	6.8	5.3	085				
7.2 "	4	20.9	20.4	289	4	20.6	19.0	297					27	13.8	10.4	270	26	14.4	11.6	275	6	3.9	2.5	059				
9.0 "													25	20.2	17.0	277	23	19.9	17.0	279	3	3.2	3.0	319				

Station	TIRUCHCHIRAPPALLI								TRIVANDRUM																			
	1730				2330				0530*				1130				1730*				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	4.1	3.8	055	30	3.0	2.8	047	30	0.9	0.7	047	30	0.5	0.1	260	30	1.2	0.7	117	30	1.0	0.1	036				
0.15 a.g.	27	6.6	6.3	059	29	6.6	6.4	048	30	2.3	0.6	033	30	2.1	0.5	266	30	2.5	1.6	269	28	3.2	0.7	245				
0.3 a.m.s.l.	27	7.0	6.8	057	29	7.2	7.0	049	30	2.5	0.2	094	30	2.1	0.3	285	30	2.3	1.0	272	28	3.0	0.7	226				
0.6 "	27	8.3	8.0	056	29	9.4	9.1	052	30	2.9	1.4	106	30	2.6	1.4	065	30	2.8	1.1	043	28	2.9	0.6	130				
0.9 "	27	9.2	8.7	053	26	10.3	9.9	052	30	3.9	3.2	079	28	3.3	2.9	074	30	4.5	3.7	062	28	4.1	3.5	082				
1.5 "	25	9.1	8.5	053	23	8.6	7.8	063	30	4.4	3.4	087	23	4.7	4.3	085	30	5.4	4.8	078	28	6.1	5.7	080				
2.1 "	22	7.5	6.6	060	20	6.7	5.8	074	30	4.6	3.4	093	18	5.3	4.5	105	30	5.7	4.8	089	26	5.7	4.9	101				
3.0 "	18	7.3	5.9	078	17	6.4	5.6	091	30	5.8	5.0	106	15	6.3	5.8	108	30	6.1	4.5	105	20	5.4	4.7	013				
3.6 "	16	7.0	6.0	084	11	5.9	5.5	098	30	6.7	5.6	107	12	6.2	5.5	104	30	6.7	5.3	106	16	5.5	5.2	095				
4.5 "	12	7.1	6.1	088	5	7.5	7.2	096	30	7.8	5.9	110	11	7.6	6.1	108	30	6.9	5.6	104	11	6.6	6.1	095				
5.4 "	12	6.9	6.3	097	3	5.7	5.3	106	30	8.0	6.4	102	7	6.8	4.9	120	30	7.3	5.3	096	3	4.7	4.3	105				
6.0 "	10	6.5	5.8	098					30	7.6	5.5	099	4	4.7	4.2	120	30	6.7	5.3	091	1	6.5	6.5	045				
7.2 "	6	7.2	5.2	089					30	6.9	5.4	093	4	6.0	4.9	100	30	6.4	5.2	092								
9.0 "	2	7.0	6.3	019					30	6.9	5.2	098	3	6.5	5.7	063	30	7.6	6.2	097								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 Km. above mean sea level
 November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	UDAIPUR												VENGURLA													
	0530				1730				2330				0530				1730				2330					
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D		
Surface . . .	30	C	A	L	M	30	0.3	0.2	340	30	C	A	L	M	30	0.6	0.6	005	30	2.0	1.9	265	30	1.3	1.2	007
0.15 a.g. . .	30	2.9	1.3	327	29	2.9	0.9	295	30	2.6	1.1	303	28	4.7	4.1	085	30	3.7	3.5	271	30	4.5	4.0	004		
0.3 a. m.s.l. . .													28	5.3	4.6	094	30	3.2	2.7	273	30	4.7	3.9	010		
0.6 ,, . . .													28	6.2	5.7	104	30	2.7	1.5	010	30	4.6	3.3	041		
0.9 ,, . . .	30	4.2	1.4	226	29	3.2	0.9	295	30	3.5	1.0	318	28	6.7	6.3	105	30	4.0	3.3	048	30	5.2	4.2	081		
1.5 ,, . . .	30	4.5	1.9	242	29	3.1	1.9	265	30	3.3	1.3	228	28	5.4	5.1	099	30	7.2	7.0	078	30	7.1	6.8	096		
2.1 ,, . . .	30	5.1	3.6	237	28	3.4	1.9	265	29	3.7	1.3	237	27	4.8	3.7	090	30	7.9	7.5	084	27	6.8	6.6	096		
3.0 ,, . . .	27	7.5	4.5	259	21	5.5	3.3	280	26	5.6	2.9	257	23	4.2	2.4	097	30	6.1	4.8	102	26	5.0	3.6	107		
3.6 ,, . . .	25	7.9	5.6	279	18	7.0	5.2	285	10	6.6	4.7	281	2	3.0	2.1	068	30	5.7	3.4	106	6	4.5	2.8	119		
4.5 ,, . . .	23	9.5	8.2	289	16	10.3	7.9	385	1	12.5	12.5	324					26	5.5	3.3	096						
5.4 ,, . . .	22	12.5	10.4	284	16	12.8	11.5	295									25	6.7	3.6	086						
6.0 ,, . . .	21	15.2	12.5	282	15	14.9	13.3	295									24	7.5	3.1	071						
7.2 ,, . . .	18	20.8	17.9	283	11	18.1	17.3	294									14	7.3	3.7	012						
9.0 ,, . . .	6	24.3	22.1	292	2	29.0	28.5	395									2	11.7	9.9	354						

Station	VERAVAL												VIJAYWADA/GANNAVARAM											
	0530				1730				2330				0530				1730				2330			
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	30	3.3	3.0	014	30	4.2	1.8	230	30	2.2	1.4	355	30	2.5	2.3	044	30	2.8	2.5	089	30	1.6	1.4	087
0.15 a.g. . .	30	8.5	6.9	018	30	4.7	2.1	207	30	5.2	2.7	349	30	4.1	3.9	075	30	3.4	3.2	089	30	5.5	5.1	102
0.3 a. m.s.l. . .	30	7.1	4.9	011	30	4.3	2.0	267	30	5.6	2.4	351	30	4.5	4.4	083	30	3.5	3.2	087	30	6.0	5.7	097
0.6 ,, . . .	30	4.8	2.4	011	30	3.5	1.0	165	30	4.9	1.3	019	30	5.0	4.7	076	30	3.7	3.3	077	30	5.7	5.4	085
0.9 ,, . . .	30	3.9	1.0	053	30	3.1	0.3	068	30	4.7	1.6	096	30	5.2	4.9	072	30	3.7	3.2	072	30	5.3	4.9	071
1.5 ,, . . .	30	4.6	2.0	152	30	4.1	1.3	021	30	4.1	1.6	111	30	4.9	4.3	070	29	4.1	3.3	057	30	5.5	4.8	070
2.1 ,, . . .	30	6.1	4.8	179	29	6.0	0.2	027	30	5.4	2.0	146	30	4.6	2.7	064	29	4.4	3.0	040	30	4.6	3.5	068
3.0 ,, . . .	29	5.7	2.8	215	28	6.3	0.5	255	28	7.1	2.3	204	30	3.7	1.0	025	28	3.9	1.5	018	30	3.7	0.3	047
3.6 ,, . . .	11	6.9	3.0	249	28	6.3	2.5	266	22	7.5	3.9	248	29	3.8	0.5	078	27	4.1	0.3	310	25	3.9	0.4	271
4.5 ,, . . .	5	11.0	8.3	247	25	8.1	5.3	275	15	9.5	5.2	258	26	4.5	0.4	115	27	3.8	0.3	262	18	4.7	1.1	230
5.4 ,, . . .	3	8.0	5.8	286	24	9.9	7.7	277	6	6.9	3.7	268	26	5.0	1.3	308	27	3.9	0.9	294	13	6.1	2.3	288
6.0 ,, . . .	3	11.5	9.6	295	24	11.4	9.8	276	6	8.3	5.7	254	26	5.5	2.2	313	27	5.2	1.6	304	12	6.1	3.0	294
7.2 ,, . . .					24	14.6	13.3	277	3	7.7	6.4	257	23	6.6	4.1	303	26	7.6	4.4	294	4	9.1	7.6	303
9.0 ,, . . .					21	19.3	18.3	276					20	9.8	8.7	273	18	10.3	8.2	263				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9 km. above mean sea level

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

Station	VISHAKHAPATNAM															
	0530*				1130				1730*				2330			
Time in I.S.T.																
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	30	2.9	2.7	015	30	2.3	1.7	059	30	2.5	2.4	048	30	0.5	0.4	038
0.15 a.g.	30	7.5	7.2	018	29	3.0	2.4	057	30	6.2	5.9	047	30	2.7	2.3	072
0.3 a.m.s.l.	30	6.5	6.0	028	29	2.9	2.5	059	30	5.9	5.7	058	30	3.3	2.9	079
0.6 „	30	5.1	4.8	048	29	3.2	3.0	060	30	5.2	4.4	061	30	4.1	3.8	072
0.9 „	30	4.7	4.5	052	26	4.1	3.9	064	30	4.9	4.5	046	30	4.7	4.3	058
1.5 „	30	6.0	5.2	060	18	5.1	4.6	063	30	6.0	5.4	036	28	5.7	5.1	050
2.1 „	30	4.9	3.1	026	17	4.6	3.7	040	30	5.5	4.1	014	26	4.9	3.7	057
3.0 „	30	4.9	3.1	355	12	3.6	1.2	350	30	5.2	2.9	357	25	4.0	1.3	332
3.6 „	30	4.4	2.3	309	12	3.9	2.2	258	29	4.5	2.5	305	20	4.4	2.6	292
4.5 „	30	4.6	2.1	280	12	4.9	2.2	257	29	5.8	3.6	285	17	4.9	3.3	276
5.4 „	29	5.8	3.3	272	12	5.3	3.6	291	29	6.3	4.1	284	12	7.0	5.3	279
6.0 „	29	7.3	4.6	274	12	6.7	5.4	291	29	6.9	5.3	282	6	9.5	7.1	285
7.2 „	29	9.2	6.8	282	12	9.5	8.3	294	29	9.5	6.6	286	3	9.8	9.5	281
9.0 „	25	13.3	11.5	281	9	15.3	14.8	282	29	14.0	11.6	276				

RADIOSONDE DATA

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

S. No.	Name of Station	Type of Instrument used	Date of starting	Hours of routine observations in GMT during the month	Remarks
1	2	3	4	5	6
1	Ahmadabad	Fan Type	20th July, 1961	00 and 12	
2	Allahabad/Bamhrauli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Minicoy	Fan type	12th May, 1963	12	
10	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December, 1943	00 and 12	
12	Port Blair	Fan type	4th December, 1949	00 and 12	
13	Srinagar	Clock type	1st August, 1962	00 and 12	
14	Trivandrum	Fan type	1st July, 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI— MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

November, 1963 (Kartika 10—Agrahayana 9, 1885 Saka)

(B) From Ascents at 12 Hours G. M. T.

Standard Pressure Surface mbs.	SRINAGAR Surf. Pr. (844 mb.)						TRIVANDRUM (1001 mb.)						VISHAKHAPATNAM (1007 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	28	1588	284.0	289	279	278.6	30	064	301.0	303	297	296.9	30	041	300.8	302	299	294.0
1000	28	155	..	..	..	..	30	074	..	..	..	..	30	106	..	..	..	..
900	28	1052	..	..	..	..	30	1001	294.2	296	292	290.2	30	1028	293.7	299	291	285.1
850	28	1531	..	..	..	..	30	1494	291.1	293	288	286.7	30	1521	290.3	295	287	280.9
800	28	2035	280.3	285	275	274.5	30	2012	288.3	292	285	284.1	30	2037	287.7	291	284	275.6
700	28	3121	273.6	281	267	266.0	30	3135	282.8	285	280	277.7	30	3156	281.9	285	277	267.1
600	28	4343	266.2	273	261		30	4401	276.0	279	273	271.0	30	4420	275.8	279	267	260.1
500	28	5740	256.8	261	250		30	5857	267.0	217	265	..	30	5874	266.7	271	262	..
400	26	7383	245.6	252	240		30	7575	257.3	261	253	..	30	7586	255.3	261	251	..
300	23	9390	230.8	236	225		30	9681	241.5	246	236	..	30	9682	240.3	245	236	..
250	22	10600	223.2	228	216		28	10941	230.3	235	225	..	29	10937	230.0	235	224	..
200	19	12026	216.5	225	208		28	12410	218.6	225	214	..	29	12377	219.2	228	213	..
175	15	12868	213.9	226	206		27	13243	211.8	218	207	..	27	13234	213.1	219	206	..
150	13	13815	211.7	216	205		26	14194	204.8	214	198	..	24	14203	206.8	213	198	..
125	8	14936	211.1	217	203		21	15272	199.4	209	193	..	22	15285	201.9	208	193	..
100	6	16268	208.7	212	202		19	16590	197.1	212	190	..	22	16613	197.7	204	192	..
80							17	17875	200.3	207	192	..	15	17912	200.9	205	197	..
70							15	18687	203.8	210	193	..	11	18765	204.5	210	199	..
60							14	19607	208.4	215	198	..	7	19712	208.3	215	204	..
50							12	20726	213.2	220	209	..	6	20780	211.0	215	208	..
40							7	22131	215.1	218	212	..						..
30																		
20																		
10																		

NOTE :—Number of observation refer to those of dynamic height.

Means are not worked out for temperature and dew point for the 1000 mbs. surface and for dew point standard pressure surfaces with temperature less than 273° A.

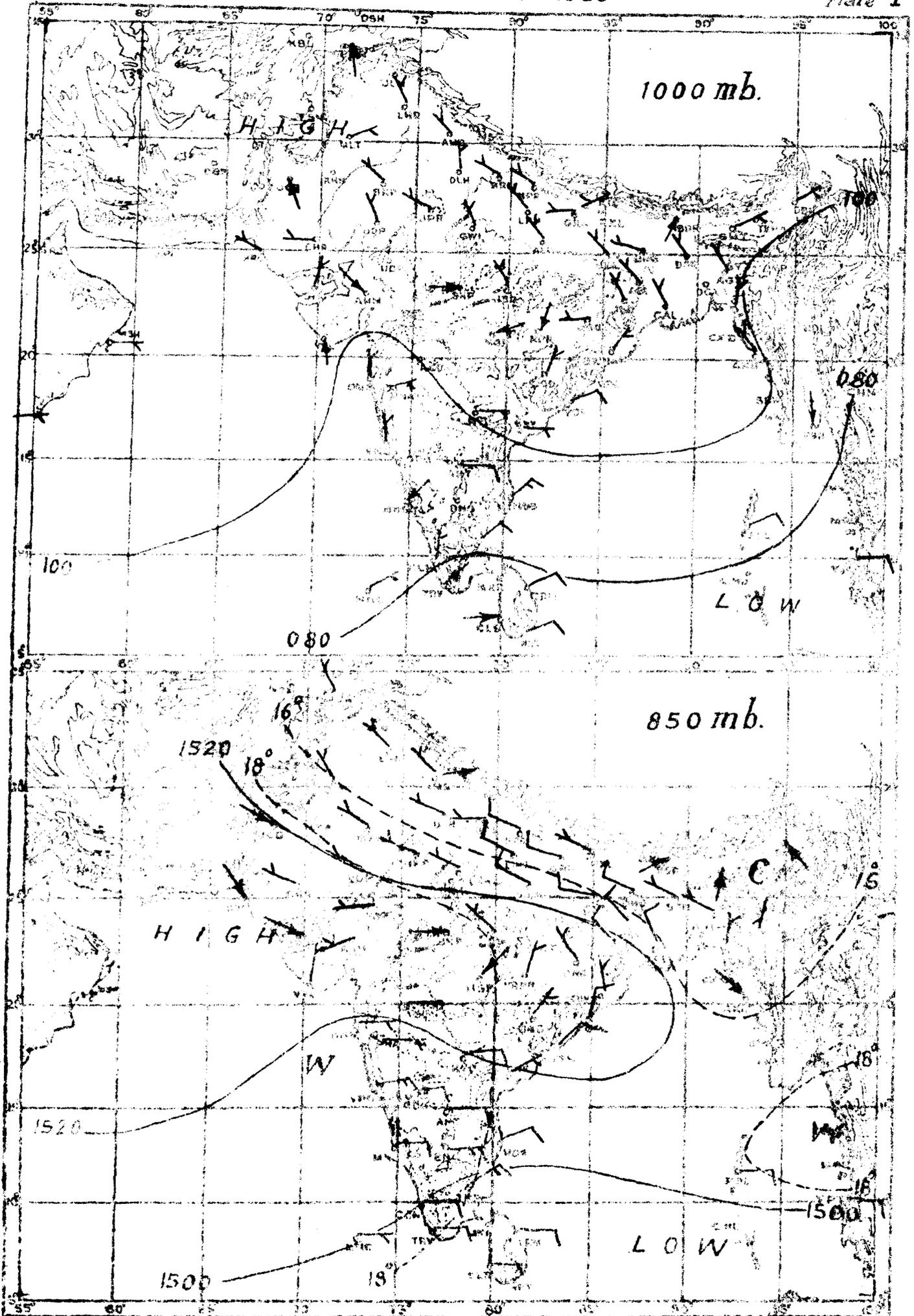
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I Met D.

NOVEMBER 1963

Plate I



RESULTANT WIND ——— 5 Knots, ——— 10 Knots, - - - 30 Knots.

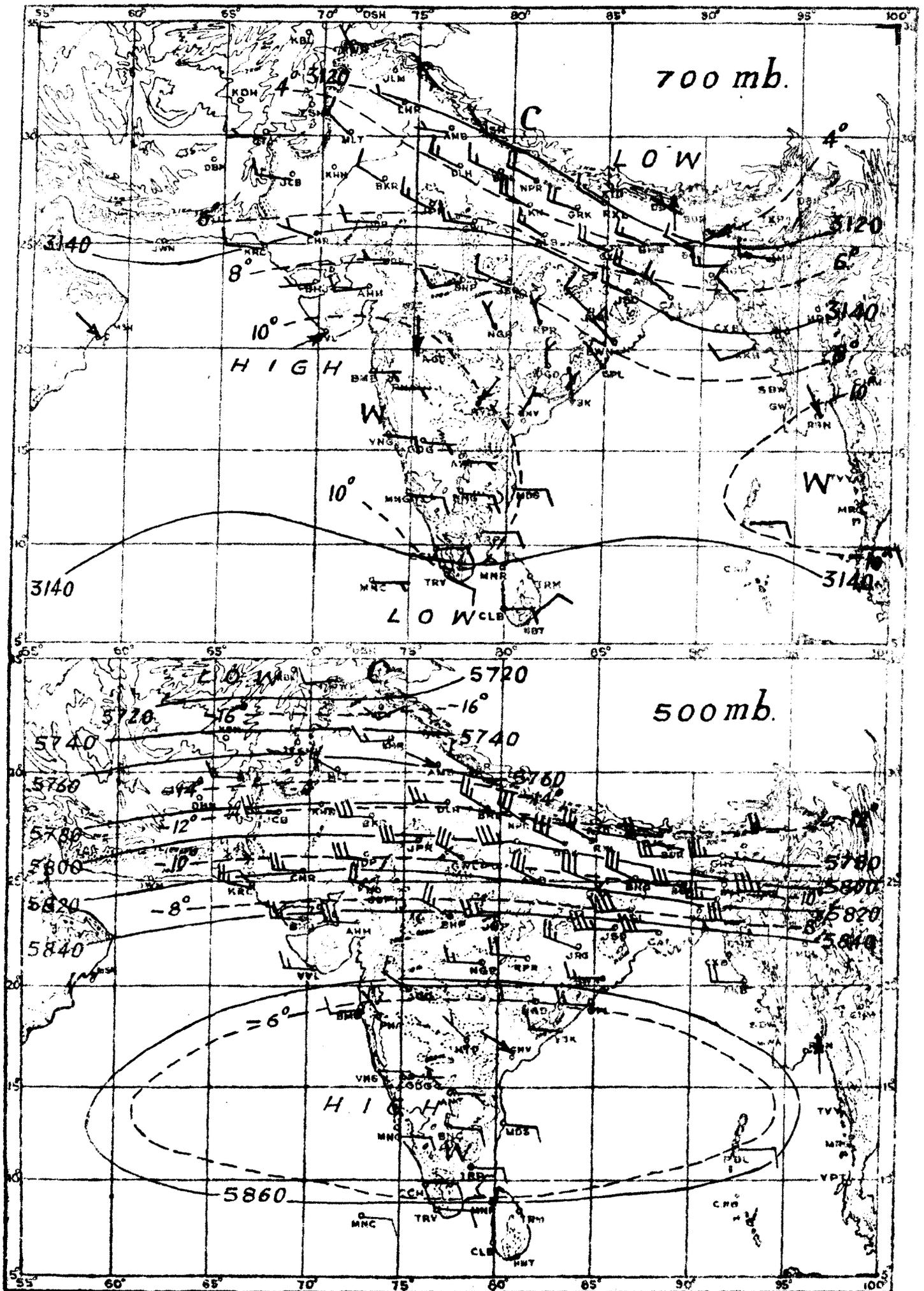
- - - - - Isotherms in degrees centigrade ——— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I. Met. D.

NOVEMBER 1963

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

INDIA WEATHER REVIEW, 1963

Monthly Weather Report

DECEMBER

Published by authority of the Government of India

Chief features :—

- (i) Feeble activity of western disturbances, except for one disturbance which developed into a depression in the second week;
- (ii) A spell of persistent rain in the south Peninsula in the early part of the month; and
- (iii) Intensification of last months' depressions in the Arabian Sea and Bay of Bengal into cyclonic storms.

Last months' western disturbance over the Western Himalayas moved away eastwards across Assam as an upper air trough by 2nd, after causing a few light showers over east Uttar Pradesh and parts of northeast India.

A western disturbance lay over Afghanistan and adjoining West Pakistan as a sea level low on 10th. Moving eastwards, it intensified and concentrated into a depression over the Punjab(I) on 12th. It, however, weakened into an upper air trough as it was moving eastwards across the hills of west Uttar Pradesh on 14th. Thereafter, the trough moved away eastwards across Assam by 16th. Under its influence, good precipitation occurred in the Western Himalayas and adjoining plains during the period 12th to 14th, the precipitation being well distributed in northwest India on 13th. Dharmasala and Srinagar recorded 6 cm of rain each, Dalhousie 5 cm and Dharampur 4 cm on that day. The showers were accompanied by hail at a number of places. According to press reports, the heavy snow fall in the hills led to disruption of telecommunication system.

Two more western disturbances affected northwest India during the month. Of these, the first one appeared over Afghanistan on 20th. It moved away eastwards across northwest India by 23rd as a feeble upper air trough. In association with the depression very light precipitation occurred in Kashmir on 22nd and 23rd. The other western disturbance also moved similarly across northwest India as an upper air trough during the period 28th to 31st. It caused a few light showers of rain or snow on 29th and 30th.

In association with the movement of the above western disturbances across the Eastern Himalayas, spells of light showers occurred in Assam on 2nd, 23rd, 24th and 30th. A trough of low pressure appearing over East Pakistan on 10th, persisted there till 14th and later moved away eastwards. In association with it a few light showers occurred in Assam and Sub-Himalayan West Bengal on 14th and 15th.

Last month's depression over the southeast Arabian Sea moved slowly westwards and intensified further into a cyclonic storm by the evening of 2nd when it was centred near Lat. 10.0°N and Long 68.5°E . Thereafter it moved northwestwards, crossed the Kuria-Muria coast by 7th night and weakened rapidly. The other depression over the southeast Bay of Bengal also intensified into a cyclonic storm by the morning of 3rd with centre near Lat. 7.0°N and Long. 83.5°E . Later it began to recurve and move northwards. It weakened into a depression by the morning of 5th and into a low pressure area by 6th morning. The system then merged with the seasonal low which remained active with the trough line running roughly along Lat. 10.0°N till 10th. In association with these developments, the spell of rainfall continued in the south Peninsula till 11th. Heavy rains also occurred at a number of places in the Madras State. Some of the noteworthy amounts of rainfall recorded were : Coonoor 7 cm on 1st, Palayancottai 8 cm on 2nd, Cuddalore 16 cm and Nagapattinam 14 cm on 3rd, Pamban 10 cm and Adirampattinam 8 cm on 4th, Nagapattinam 40 cm and Adirampattinam 22 cm on 5th, Nellore 16 cm on 7th, Kallakuruchi 9 cm on 8th and Chingalpet 16 cm on 9th. The Bay Islands also received good rainfall during this period. Port Blair recorded 9 cm of rain on 11th. According to press reports, the gales and heavy rains associated with the Bay cyclonic storm caused severe damage to public property in the coastal areas of the Madras State, Tanjore district being the worst affected with more than 37,000 acres of paddy land submerged in flood waters. A few fishermen who left the coast for fishing were also feared to have been killed.

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A well marked trough of low pressure developing along the west coast on 20th caused increased inflow of moist air into the Peninsula leading to a spell of rain in the Madras State during the period 19th to 26th. Nagapattinam recorded 5 cm of rain on 22nd. The northern end of the trough of low pressure became active from 24th and persisted till 26th. It caused a few showers in west Madhya Pradesh and adjoining Gujarat Region on 26th and 27th.

For the major part of the month, the country generally had night temperatures above normal or normal. During the first week, night temperatures were above normal in the central parts of the country, in Gujarat State and in the Peninsula. During the second week almost the entire country was having night temperatures above normal. They continued to be so in north Peninsula upto 26th and in Gujarat State during the last week. Night temperatures were below normal in Gujarat State during the third week upto 18th, in central parts of the country from 15th to 24th and over northwest India from 22nd to 26th.

The total rainfall for the month was in large excess in coastal Andhra Pradesh, the Madras State and coastal Mysore and in moderate excess in the Bay Islands the Punjab(I), south Interior Mysore and the Arabian Sea Islands. It was in slight defect in Sub-Himalayan West Bengal, Jammu and Kashmir, Rayalaseema and Kerala, in moderate defect in Assam and west Uttar Pradesh and in large defect in Gangetic West Bengal, Orissa, Bihar Plains, east Uttar Pradesh, Rajasthan and Madhya Pradesh. There was no rain in Bihar Plateau, Gujarat State, Maharashtra State, Telangana and north Interior Mysore. Data for Himachal Pradesh are not available.

The mean maximum temperature was above normal in Madhya Maharashtra and normal over the rest of the country outside Himachal Pradesh. The mean minimum temperature was above normal in Assam, West Bengal, Bihar Plains, Gujarat State, the Konkan, Madhya Maharashtra, Marathwada, Rayalaseema and Interior Mysore and below normal in Jammu and Kashmir. It was normal over the rest of the country outside Himachal Pradesh.

The mean relative humidity in the morning was above normal in west Uttar Pradesh, the Punjab(I), east Rajasthan, Saurashtra and Kutch, Telangana and the Arabian Sea Islands and normal over the rest of the country outside Himachal Pradesh.

The mean cloud amount in the morning was below normal in Gangetic West Bengal, west Uttar Pradesh, the Punjab(I) and west Rajasthan and normal in Assam, Bihar State, east Uttar Pradesh and Jammu and Kashmir. It was above normal over the rest of the country outside Himachal Pradesh.

Table I contains the divisional and sub-divisional means of rainfall, temperature, humidity and cloud amount for the 15 chief political divisions and 31 sub-divisions. The stations whose observations are used for preparing these means are given in the subsequent tables.

The highest maximum temperature given for any station in the accompanying tables is that recorded within the 24 hours ending at 0830 hrs. I. S. T. of the date noted in the succeeding column similarly the heaviest fall in 24 hours for any station denotes the amount recorded during the 24 hours ending at 0830 hrs. I. S. T. of the date given in the succeeding column.

POONA 5,

Dated the 23rd January, 1964.

A. K. MALLIK,

for Director General of Observatories.

TABLE I—DIVISIONAL AND SUB-DIVISIONAL MEANS—DECEMBER, 1963 (AGRAHAYANA 10—PAUSA 10, 1885 SAKA)

1	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %		Cloud		i	Rainfall (millimetres)	Percentage of normal	Mean maximum temperature °C	Mean minimum temperature °C	Relative humidity %		Cloud	
					0830 hrs. IST.	1730 hrs. IST.	0830 hrs. IST.	1730 hrs. IST.						0830 hrs. IST.	1730 hrs. IST.		
2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Division									Division—contd.								
1. Assam (Including Manipur, Tripura)	6.3	67	24.0	11.6	85	73	2.5	1.6	8. Rajasthan	0.3	6	25.6	9.6	60	36	1.4	1.8
	-3.1		+0.1	+1.2	-1		+0.2			-1.9		+0.3	+0.5	+2		-0.2	
2. West Bengal	0.8	22	26.1	14.1	73	63	1.1	1.3	9. Madhya Pradesh	1.5	23	26.2	10.2	64	40	2.1	2.3
	-2.8		+0.3	+1.4	0		-0.1			-5.1		+0.2	+0.3	-2		+0.5	
3. Orissa	0.5	11	27.4	14.0	70	56	2.0	2.0	10. Gujarat State	0	0	29.6	15.6	63	42	2.3	2.3
	-1.0		+0.6	+0.1	-2		+0.5			-1.3		+0.2	+2.0	+5		+1.0	
4. Bihar	0.1	2	25.0	11.3	75	62	1.3	1.2	11. Maharashtra State	0	0	30.1	15.7	62	41	2.7	3.0
	-1.2		+0.6	+0.9	+1		+0.2			-4.9		+0.7	+1.0	0		+1.2	
5. Uttar Pradesh	3.9	48	24.1	8.7	77	56	1.1	1.2	12. Andhra Pradesh	17.5	128	29.5	18.1	76	53	3.4	3.4
	-1.2		+0.4	+0.3	+2		-0.2			+3.8		+0.6	+1.2	+3		+1.0	
6. Punjab (India) (Including Himachal Pradesh and Delhi)*	24.1	148	21.6	6.7	80	53	1.3	1.6	13. Madras State	210.8	190	28.5	21.5	83	70	5.0	4.4
	+7.8		-0.6	+0.2	+7		-0.9			+99.9		-0.3	+0.5	+2		+1.0	
7. Jammu and Kashmir	45.6	86	10.0	-2.7	73	71	4.4	3.8	14. Mysore	8.5	100	29.4	17.9	72	46	3.6	3.5
	-7.6		-0.3	-2.6	+3		-0.3			0		+0.5	+1.4	+4		+1.2	
									15. Kerala	38.9	88	30.9	23.3	77	69	4.2	4.3
										-5.3		+0.1	-0.7	+1		+0.9	
Sub-Division									Sub-Division—Contd.								
1. Bay Islands	269.8	134	29.2	23.1	73	83	5.2	5.7	16. Madhya Pradesh (East)	1.3	23	26.2	10.2	69	44	2.0	2.2
	+68.6		+0.5	+0.4	+2		+1.0			-4.4		+0.4	+0.1	-3		+0.5	
2. Assam (Including Manipur, Tripura)	6.3	67	24.0	11.6	85	73	2.5	1.6	17. Gujarat Region	0	0	30.8	15.3	66	35	2.1	1.9
	-3.1		+0.1	+1.2	-1		+0.2			-0.8		+0.1	+2.3	+2		+0.9	
3. Sub-Himalyan, West Bengal	2.1	75	24.6	12.3	79	66	1.4	1.8	18. Saurashtra and Kutch	0	0	28.9	15.9	61	45	2.4	2.5
	-0.7		0.4	+1.3	+2		+0.3			-1.5		+0.3	+1.8	+6		+1.0	
4. Gangetic, West Bengal	0.3	8	26.5	14.6	71	62	1.0	1.2	19. Konkan	0	0	31.2	20.7	68	63	2.9	3.1
	-3.6		+0.5	+1.4	0		-0.3			-2.2		+0.7	+1.5	+2		+1.3	
5. Orissa	0.5	11	27.4	14.0	70	56	2.0	2.0	20. Madhya Maharashtra	0	0	30.7	14.0	62	34	2.9	3.1
	-1.0		+0.6	+0.1	-2		+0.5			-5.4		+1.2	+1.2	+2		+1.4	
6. Bihar Plateau	0	0	24.8	11.1	70	60	1.4	1.5	21. Marathwada	0	0	29.4	14.1	53	33	2.6	3.3
	-5.5		+0.3	+0.5	+3		+0.1			-5.9		+0.4	+1.1	-3		+0.9	
7. Bihar Plains	0.1	3	25.2	11.5	78	64	1.3	1.0	22. Vidarbha	0	0	28.7	13.7	59	35	2.5	2.8
	-3.5		+0.8	+1.3	0		+0.2			-6.9		+0.3	+0.3	-4		+0.9	
8. Uttar Pradesh, East	1.7	33	24.8	9.1	77	57	1.2	1.2	23. Coastal Andhra Pradesh	33.7	164	29.1	19.5	76	63	3.4	3.4
	-3.4		+0.6	+0.3	0		+0.1			+13.2		+0.7	+0.9	+1		+0.7	
9. Uttar Pradesh, West	7.1	56	23.1	8.1	77	54	1.0	1.1	24. Telangana	0	0	29.7	15.1	77	42	3.2	3.0
	-5.5		0	+0.3	+6		-0.6			-5.9		+0.8	+0.7	+7		+1.1	
10. Punjab (India) (Including Delhi)	24.1	148	21.6	6.7	80	53	1.3	1.6	25. Rayalaseema	9.0	82	29.9	19.8	73	49	3.8	3.9
	+7.8		-0.6	+0.2	+7		-0.9			-2.0		+0.2	+2.5	0		+1.4	
11. Himachal Pradesh	27.8	..	22.5	6.9	92	59	3.3	0.9	26. Madras State	210.8	190	28.5	21.5	83	70	5.0	4.4
	..		..	..	..		..			+99.9		-0.3	+0.5	+2		+1.0	
12. Jammu and Kashmir	45.6	86	10.0	-2.7	73	71	4.4	3.8	27. Coastal Mysore	12.3	154	32.7	21.5	72	62	3.6	3.9
	-7.6		-0.3	-2.6	+3		-0.3			+4.3		+0.5	+0.8	+5		+1.1	
13. Rajasthan, West	0.2	4	25.5	9.3	56	34	1.0	1.3	28. Interior Mysore, North	0	0	29.7	17.1	65	37	3.1	3.0
	-4.7		+0.2	+0.5	-3		-0.8			-6.4		+0.8	+1.5	+3		+1.4	
14. Rajasthan, East	0.4	7	25.6	9.8	64	38	1.7	2.1	29. Interior Mysore, South	14.2	135	27.8	16.9	77	49	4.1	3.8
	-5.0		+0.4	+0.5	+6		+0.4			+3.7		+0.1	+1.6	+4		+1.0	
15. Madhya Pradesh (West)	1.6	22	26.1	10.3	61	37	2.1	2.4	30. Kerala	38.9	88	30.9	23.3	77	69	4.2	4.3
	-5.7		0	+0.4	-1		+0.6			-5.3		+0.1	+0.7	+1		+0.9	
									31. Arabian Sea Islands	82.1	133	30.9	23.7	83	73	4.1	4.3
										+20.3		+0.7	+0.4	+11		+1.0	

NOTE --The entries in the second line for each division and sub-division indicate departures from normal.

*Data of Himachal Pradesh not included.

TABLE II—SUMMARY OF OBSERVATIONS OF TEMPERATURE, RAINFALL AND WEATHER—DECEMBER 1963 (AGRAHAYANA 10-PAUSA 10, 1885 SAKA) 661

Table with columns for Sub-Division and station, Air temperature in °C, Rainfall in millimetres, No. of rainy days (2.5 mm. or more), Wind speed, kms. per hour, and Weather phenomena—No. of days with various conditions. Rows list stations like Orissa, Bihar Plateau, Bihar Plains, and Uttar Pradesh.

(R) Register not received.

TABLE II—SUMMARY OF OBSERVATIONS OF TEMPERATURE, RAINFALL AND WEATHER—DECEMBER, 1963 (AGRAHAYANA 10-PAUSA 10, 1885 SAKA) 667

Sub-Division and station	Air temperature in °C								Rainfall in millimetres						No. of rainy days. (2.5 mm. or more)		Wind speed, km. per hour			Weather phenomena—No. of days with										
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total in the month	Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 on 0.2 mm.)	Precipitation (0.3mm or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust-storm	Ground frost	Gale	Squall	Line squall	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20(a)	20(b)	21	22	23	24	25	26	27	28	29	
Hydrometeorological Observatories—(Contd.)																														
Mahanadi Catchment (Contd.)																														
Blunkund	25.9	..	30.1	1	11.4	..	7.6	29	0	1.0	..	1.0	2	0	..	4.9	2.3	..	0	1	0	0	0	2	0	0	0	0	0	0
Sonepur	27.0	..	31.9	1	13.7	..	10.5	30	..	0	..	0	..	0	..	..	1.6	..	0	0	..	..	..	..	..	..	..	..	..	..
Khujawan	26.6	..	32.4	14	11.1	..	7.0	19	0	0	..	0	..	0	..	5.3	3.3	..	0	0	0	0	0	0	0	0	0	0	0	0
Narmada Catchment																														
Bagra Tawa	26.9	..	32.6	13	10.1	..	4.4	18	0	0.2	..	0.2	1	0	..	4.9	3.2	..	1	0	0	0	0	0	0	0	0	0	0	0
Punasa	28.0	..	33.2	13	11.9	..	6.2	17	0	0	..	0	..	0	..	5.8	3.5	..	0	0	0	0	0	5	0	0	0	0	0	0
Thikri	29.8	..	35.5	13	12.4	..	6.9	21	..	0	..	0	..	0	..	..	..	..	0	0	0	0	0	0	0	0	0	0	0	0
Sabarmati Catchment																														
Daroi	29.4	..	35.0	11	13.9	..	9.0	16, 21	0	0	..	0	..	0	..	..	..	..	0	0	0	0	0	0	0	0	0	0	0	0
Gandak Catchment																														
Jomosom	14.0	..	17.8	3	-1.1	..	-5.3	23	0	0	..	0	..	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Khudi Bazar	..	..	..	..	..	..	..	..	3.2	3.2	..	3.2	14	1	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
Timure	17.1	..	19.4	1, 28	4.4	..	0	26	0	0	..	0	..	0	..	..	..	..	0	0	..	..	..	..	..	..	..	..	..	..
Pokhara	20.5	..	22.6	4	9.3	..	6.0	28	3.1	3.9	..	3.6	14	1	..	3.5	3.4	..	0	2	0	0	0	3	0	0	0	0	0	0
Gorkha	19.4	..	21.5	1, 2	9.9	..	8.2	24	3.9	4.2	..	4.2	14	1	..	..	..	..	0	1	0	0	0	1	0	0	0	0	0	0
Nuwakot	22.0	..	24.5	5	9.0	..	7.1	21, 24, 29	0	0	..	0	..	0	..	..	..	..	0	0	..	..	..	..	..	..	..	..	..	..
Ghaghara Catchment (Trans Himalayan Region)																														
Dailekh	16.3	..	18.8	10	6.3	..	3.1	30	0	17.0	..	14.0	13	2	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..
Ghaghara Catchment																														
Dadeldhura	13.5	..	16.6	29	5.0	..	1.0	14	4.3	43.1	..	30.5	14	2	..	5.7	5.5	..	0	2	0	1	3	2	0	12	0	0	0	0
Sallayana	19.0	..	21.9	1	7.0	..	4.5	23, 24, 25	3.0	5.0	..	3.0	14	1	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..
Butwal	25.6	..	27.7	30	13.8	..	9.4	17, 24, 25	1.4	1.4	..	1.4	14	0	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
Bagmati Catchment Katmandu*																														
Kosi Catchment																														
Chautara	19.7	..	21.9	1, 7	7.5	..	4.6	24	0	1.7	..	1.7	14	0	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
Chepua	..	..	..	..	..	..	..	..	1.5	11.6	..	6.9	17	2	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..
Walungchung Gola	7.4	..	12.9	7	-1.9	..	-5.1	23	13.0	13.0	..	12.0	14	1	..	..	..	..	0	2	..	..	..	..	..	..	..	..	..	..
Taplethok	19.5	..	21.6	7	8.4	..	5.3	30	0	8.4	..	2.4	4	0	..	..	..	..	0	6	..	..	..	..	..	..	..	..	..	..
Bhojpur	16.7	..	19.6	4	8.3	..	5.6	25	0	0	..	0	..	0	..	..	..	..	0	0	..	..	..	..	..	..	..	..	..	..
Taplejung	15.6	..	20.3	28	6.4	..	3.4	30	0	9.4	..	7.8	15	1	..	..	..	..	2	3	0	0	0	3	0	0	0	0	0	0
Okhaldhunga	15.8	..	18.9	4	6.3	..	3.1	25	0	2.0	..	1.0	5, 14	0	..	2.7	2.0	..	0	2	0	0	0	0	0	1	0	0	0	0
Chainpur	..	..	..	..	10.0	..	8.0	27, 29	0	1.4	..	1.4	15	0	..	..	..	..	0	1	..	..	..	..	..	..	..	..	..	..
Angbung†	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Barahakshetra	24.6	..	26.8	13	12.3	..	10.0	25	0	0	..	0	..	0	..	5.5	4.2	..	0	0	0	0	0	0	0	0	0	0	0	0
Tista Catchment																														
Gangtok	15.6	..	20.2	28	6.4	..	4.2	30	2.9	31.5	..	18.2	1	3	..	4.3	4.1	..	0	6	0	0	0	8	0	0	0	0	0	0
Gezing	18.1	..	21.5	28	7.3	..	5.0	26, 30	4.3	34.5	..	15.8	2	3	..	..	..	..	0	3	..	..	..	..	..	..	..	..	..	..

†Data not available

(a) Mean of 30 days.

*Data included under 'Nepal'

668 ADDENDA TO TABLE II-SUMMARY OF OBSERVATIONS OF TEMPERATURE, RAINFALL AND WEATHER JANUARY-DECEMBER 1963, (1884-1885 SAKA)

Sub-Division and station	Air temperature in °C.								Rainfall in millimetres						No. of rainy days (2.5 mm. or more)	Wind speed ¹ Km p. h.	Weather phenomena—No. of days with												
	Mean maximum	Departure from normal	Highest	Date	Mean minimum	Departure from normal	Lowest	Date	Total fall during 0830-1730 hours	Total fall in 24 hours	Departure from normal	Heaviest fall in 24 hours	Date	Total in the month			Departure from normal	Mean between 0830-1730 hours	Mean 24 hours	Departure from normal	Precipitation (0.1 and 0.2 mm)	Precipitation (0.3 mm or more)	Snow or sleet	Hail	Thunder heard	Fog	Dust-storm	Ground-frost	Gale	Squall	Line squall
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 (a)	20 (b)	21	22	23	24	25	26	27	28	29
Arabian Sea Islands.																													
JANUARY																													
Amini (R)																													
Minicoy	30.2	+0.7	32.3	13	23.1	+0.3	20.8	23	77.0	126.7	+80.2	28.8	8	11	+8.4	8.3	6.0	-0.9	2	11	0	0	5	0	0	0	0	0	0
FEBRUARY																													
Amini (R)																													
Minicoy	30.0	+0.3	32.0	26	22.2	-1.5	19.6	19	103.3	112.9	+94.9	32.0	11	5	+3.8	7.7	4.7	-2.7	0	8	0	0	6	0	0	0	0	0	0
MARCH																													
Amini (R)																													
Minicoy	31.3	+1.1	32.0	11	24.2	-0.7	22.3	25, 26	14.2	6.5	-15.8	4.5	7	1	-0.5	8.0	5.5	-1.6	0	2	0	0	4	0	0	0	0	0	0
APRIL																													
Amini	34.2	+1.1	35.5	30	26.3	-0.4	21.7	11	0.8	30.8	+1.6	30.0	11	1	-0.6	8.0	7.1	-2.1	0	2	0	0	0	0	0	0	0	0	0
Minicoy	31.8	+1.0	32.5	22,30	24.5	-1.9	22.3	6	27.5	114.4	+56.0	77.4	24	5	+1.5	7.0	4.4	-4.9	0	8	0	0	8	0	0	0	0	0	0
MAY																													
Amini	33.4	+0.5	36.2	7,8	26.7	-0.6	23.6	28	176.7	227.3	+114.3	54.1	26	10	+5.2	10.5	9.2	-3.0	0	13	0	0	9	0	0	0	0	0	0
Minicoy	31.7	+0.4	33.6	17	25.6	-0.6	22.8	2	119.9	181.9	+4.1	49.5	21	10	+1.3	9.5	7.5	-4.6	2	14	0	0	14	0	0	0	0	0	0
JUNE																													
Amini	30.7	+0.1	32.3	24	25.8	+0.2	23.4	1	44.8	297.8	-70.7	99.9	20	17	+0.2	19.0	17.5	-2.3	1	23	0	0	3	0	0	0	0	0	0
Minicoy	30.7	+0.7	31.6	14	25.2	0	22.5	22	42.4	168.2	-126.4	35.0	6	12	-5.0	14.3	13.8	-5.2	1	22	0	0	3	0	0	0	0	0	0
JULY																													
Amini	30.1	+0.4	31.7	15	25.2	-0.1	23.2	26	116.9	224.3	+124.3	90.4	26	19	+3.3	22.0	21.9	-0.6	1	23	0	0	0	0	0	0	0	0	0
Minicoy	30.2	+0.8	31.0	2,12	24.9	0	22.7	30	170.4	309.6	+84.6	127.6	25	15	+1.3	16.5	15.5	-3.3	1	20	0	0	1	0	0	0	2	0	0
AUGUST																													
Amini	29.4	-0.2	30.7	9	25.3	0	22.9	22	121.6	293.6	+96.5	76.3	20	17	+5.7	21.3	20.7	-0.4	1	26	0	0	1	0	0	0	0	0	0
Minicoy	30.1	-0.8	30.8	14	24.6	-0.5	22.5	2,31	76.2	206.1	+7.7	31.0	31	17	+5.2	14.2	13.2	-2.9	1	22	0	0	0	0	0	0	0	0	0
SEPTEMBER																													
Amini	31.0	+1.2	33.7	21, 6, 17, 18	25.4	+0.2	22.9	22	16.6	78.5	-72.9	35.1	11	8	-2.1	15.2	14.3	-2.3	0	15	0	0	1	0	0	0	0	0	0
Minicoy	30.0	+0.6	30.8	18	24.4	-0.7	21.8	24	60.7	165.1	+5.1	53.8	12	11	+0.9	11.2	9.9	-4.3	3	18	0	0	0	0	0	0	0	0	0
OCTOBER																													
Amini	30.9	+0.7	33.2	2	25.0	0	23.1	31	109.1	166.6	+20.8	48.4	23	13	+4.4	10.9	9.7	-0.3	1	16	0	0	4	0	0	0	0	0	0
Minicoy	30.6	+1.0	31.6	15	24.7	+0.3	20.3	30	38.1	60.4	-121.5	18.8	18	6	-4.6	10.2	8.1	-2.5	0	10	0	0	1	0	0	0	0	0	0
NOVEMBER																													
Amini	31.8	+1.3	33.7	14, 15	23.9	-0.4	21.1	9	95.2	116.3	+39.6	26.4	18	7	+2.1	5.4	2.8	-3.0	0	10	0	0	9	0	0	0	0	0	0
Minicoy	30.5	+1.0	32.4	22	23.9	+0.4	22.0	7	213.2	306.6	+167.4	68.2	20	15	+7.3	7.3	4.9	-3.1	1	18	0	0	6	0	0	0	0	0	0
DECEMBER																													
Amini	31.2	+0.6	33.0	6, 31	23.8	+0.4	21.2	18, 20	27.6	86.4	+48.5	41.1	1	4	+2.0	6.0	4.4	-0.7	0	7	0	0	2	0	0	0	0	0	0
Minicoy	30.5	+0.8	31.7	28, 29	23.7	+0.4	21.3	18	11.6	77.8	-7.8	30.6	2	5	+0.7	6.6	5.0	-1.9	2	8	0	0	1	0	0	0	0	0	0

(R) Register not received.

Sub-Division and station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mb.	Relative humidity %	Departure from normal	Cloud amount (Okta)		Mean wind speed Km. per hour	Wind speed (Kmph.)			No. of observations									
			At mean sea level or height in g.p.m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction									
																		N	NE	E	SE	S	SW	W	NW	Caln	Variab
			19	20	21	22	23	24				25	26		27	28											
Madhya Pradesh (West) (Contd.) Gwalior (Contd.)	1730	207	1015.1	991.2	..	20.7	13.5	6.4	9.7	40	..	1.9	..	2.8	0	0	21	7	6	1	1	1	0	0	5	10	0
	2330	..	1017.7	993.0	..	10.9	8.6	6.0	9.3	73	..	1.1	..	1.1	0	0	5	0	0	0	1	2	1	0	1	26	0
Shoepur	0830	235	1013.3	990.3	-0.3	12.2	9.2	5.8	9.2	66	-4	2.1 (a) 2.9 (b)	+0.1	2.9	0	0	20	3	3	2	3	6	3	0	0	11	0
	1730	..	1014.5	937.7	..	22.7	15.0	8.1	10.8	40	..	2.9	..	4.5	0	0	26	14	4	0	0	1	1	2	4	5	0
Shivpuri	0830	464	1018.8	964.6	..	13.7	10.0	6.5	9.6	63	..	1.8	..	2.0	0	0	15	0	5	2	3	3	2	0	0	16	0
	1730	..	1014.5	961.6	..	19.7	12.4	5.6	9.1	40	..	1.9	..	3.0	0	0	24	1	2	0	0	2	0	1	17	7	1
Nowong	0830	229	1019.3	991.7	0	11.5	10.0	8.5	11.1	82	+6	2.5	+1.0	0.7	0	0	6	0	0	0	0	1	5	0	0	25	0
	1730	..	1015.1	938.8	..	21.0	14.9	9.7	12.0	49	..	2.1	..	0.1	0	0	1	1	0	0	0	0	0	0	0	30	0
Guna	0530	478	1017.3	961.1	..	8.7	7.1	5.4	9.0	80	..	1.3	..	2.3	0	0	20	3	0	8	7	1	0	0	1	11	0
	0830	..	1016.9	963.3	+0.4	14.5	10.6	6.9	9.9	61	-5	2.2	+0.8	2.8	0	0	22	0	2	10	7	2	1	0	0	9	0
	1130	..	1017.2	963.1	..	22.4	14.0	6.8	9.9	37	..	2.1	..	7.4	0	2	28	2	7	6	7	2	0	2	4	1	0
	1730	..	1014.2	960.2	..	21.7	14.3	8.1	10.9	42	..	2.3	..	5.0	0	0	30	5	8	9	2	0	0	1	5	1	0
Nirnach	2330	..	1018.1	962.0	..	11.9	9.0	6.0	9.4	68	..	1.1	..	3.0	0	0	22	1	3	7	5	3	0	1	2	9	0
	0830	496	1019.1	961.5	+0.4	14.3	10.2	6.0	9.5	58	+5	2.3	+0.9	4.2	0	0	24	0	14	7	2	0	0	1	0	7	0
Rajgarh	1730	..	1014.1	953.8	..	23.5	14.1	5.6	9.3	32	..	2.0	..	5.7	0	0	27	2	13	3	0	0	3	0	0	4	1
	0830	382	1013.7	973.7	..	12.4	10.5	8.5	11.2	78	..	1.6	..	1.8	0	0	24	3	0	8	5	8	0	0	0	7	0
Sagar	1730	..	1015.0	971.6	..	23.1	16.3	10.9	13.0	49	..	0.5	..	1.6	0	0	24	8	0	19	2	4	0	0	0	7	0
	0830	551	1013.1	954.3	+0.1	16.2	10.2	3.8	8.1	45	-5	1.9	+0.5	4.5	0	0	29	0	10	11	1	0	1	4	2	2	0
Ratlam	1730	..	1013.9	952.0	..	21.8	12.8	3.8	8.7	32	..	2.1	..	2.6	0	0	23	0	7	7	1	0	1	4	3	3	0
	0830	436	1013.1	961.9	+0.5	15.8	11.9	8.3	11.1	61	-3	2.2	+0.3	13.2	0	0	22	1	15	10	1	1	1	1	0	1	0
Bhopal (Bairagarh)	1730	..	1013.5	959.0	..	24.1	16.4	10.8	13.0	44	..	3.0	..	9.7	0	1	30	3	10	14	9	0	2	1	1	0	0
	0230	523	1016.5	953.9	..	13.6	10.0	6.3	9.7	62	..	2.0	..	6.9	0	0	30	8	14	2	2	1	3	0	0	1	0
	0530	..	1016.9	955.9	..	11.9	9.2	5.9	9.7	66	..	2.0	..	6.6	0	0	28	3	12	3	2	1	2	0	0	3	0
	0830	..	1018.4	953.0	+0.1	15.7	11.0	6.5	9.7	55	-5	2.9	+1.2	6.5	0	1	22	4	5	7	3	0	0	1	0	3	0
Ujjain	1130	..	1016.3	957.8	..	22.3	13.7	5.8	9.4	35	..	2.5	..	11.9	0	3	27	5	8	3	9	0	1	1	0	1	0
	1730	..	1013.7	955.1	..	23.1	14.1	6.0	9.5	34	..	2.8	..	8.1	0	1	29	5	13	6	2	1	0	2	1	1	0
	2330	..	1017.1	956.8	..	15.3	10.9	6.6	9.8	56	..	1.6	..	6.5	0	0	29	7	12	5	2	4	0	0	1	2	0
	0830	439	1017.4	960.9	(1)	14.1	11.8	9.8	12.2	75	..	2.4	..	5.4	0	1	19	0	4	3	4	1	1	1	0	11	1
Narsinghpur	1730	..	1012.9	958.0	(1)	23.4	17.7	13.9	16.0	56	..	2.2	..	5.6	0	0	27	4	14	5	1	0	0	5	1	4	1
	0830	356	1019.3	977.5	..	14.2	11.3	8.3	11.0	69	..	2.2	..	3.4	0	0	30	5	11	6	2	1	0	2	0	1	0
Hoshangabad	1730	..	1013.6	973.5	..	24.5	17.4	12.2	14.3	47	..	2.0	..	1.8	0	0	26	1	7	5	1	4	1	5	4	5	0
	0830	302	1013.6	963.1	0	15.3	11.7	8.2	10.8	60	0	1.7	+0.3	5.9	0	0	30	0	9	15	4	1	0	1	0	1	0
Indore	1730	..	1013.5	979.2	..	24.4	16.0	8.3	11.4	36	..	2.1	..	3.9	0	0	29	0	3	10	7	1	2	0	0	2	0
	0530	567	1016.7	950.7	..	11.9	9.4	7.1	10.0	72	..	1.2	..	5.0	0	0	22	1	8	9	0	0	4	0	0	9	0
	0830	..	1018.0	952.8	+0.1	15.8	11.6	7.7	10.7	60	+8	2.2	+0.8	3.9	0	1	16	0	9	11	0	4	1	1	0	14	0
	1130	..	1016.5	952.7	..	23.4	14.9	7.7	10.7	37	..	1.7	..	11.5	0	3	27	1	7	14	1	3	2	1	0	1	1
Rajpur (Jhabua)	1730	..	1013.0	949.8	..	23.7	15.4	8.6	11.5	39	..	1.8	..	9.5	0	1	29	8	15	4	0	1	1	2	1	1	0
	2330	..	1017.0	951.7	..	14.7	11.3	8.1	10.9	65	..	1.4	..	5.5	0	0	22	1	2	11	1	1	4	0	2	9	0
	0830	293	1017.8	933.5	..	15.6	12.7	9.8	12.3	69	..	2.4	..	2.8	0	0	15	0	1	11	2	0	1	0	0	16	0
	1730	..	1012.9	980.0	..	26.7	17.7	10.5	12.9	37	..	2.7	..	4.3	0	0	24	0	1	15	1	0	3	4	0	7	0
Chhindwara	0830	685	1018.3	939.9	+0.3	14.8	10.9	7.0	10.2	61	-4	1.9	+0.5	1.7	0	0	10	1	6	1	0	0	1	0	1	21	0
	1730	..	1012.4	936.6	..	23.4	14.9	5.5	9.1	32	..	2.1	..	4.6	0	0	29	4	4	5	2	4	1	5	4	5	0
Seoni	0830	619	1018.3	947.6	+0.6	16.4	11.3	6.3	9.7	52	-8	1.2	-0.2	5.4	0	0	31	13	7	2	0	2	0	4	3	0	0
	1730	..	1013.4	944.6	..	22.8	14.2	6.5	9.9	35	..	2.4	..	5.9	0	0	31	7	8	3	4	2	2	0	0	0	0
Betul	0830	653	1018.4	943.6	+0.3	15.4	11.4	7.7	10.6	61	-3	3.2	+1.7	3.2	0	0	24	0	11	9	4	0	0	0	0	7	0
	1730	..	1013.0	940.5	..	23.1	14.6	7.5	10.4	38	..	3.2	..	3.6	0	0	30	10	15	0	3	0	0	2	0	1	0
Khandwa	0830	318	1017.6	980.6	+0.2	16.7	12.7	8.9	11.5	61	+1	1.5	+0.1	1.8	0	0	21	0	8	3	3	4	2	0	1	10	0
	1730	..	1012.8	977.0	..	26.5	16.3	7.3	10.3	30	..	2.3	..	3.7	0	0	31	0	29	0	0	0	2	0	0	0	0
Madhya Pradesh (East) Satna	0530	317	1017.1	979.1	..	9.2	7.7	5.8	9.3	80	..	0.5	..	1.0	0	0	10	0	0	0	1	1	1	6	1	21	0
	0830	..	1019.1	981.6	+0.3	12.7	9.6	6.3	9.5	66	0	1.4	0	0.7	0	0	10	0	0	0	2	3	0	4	1	21	0
	1130	..	1016.9	980.6	..	21.5	13.5	5.0	9.0																		

TABLE III--SUMMARY OF OBSERVATIONS AT FIXED HOURS--DECEMBER, 1963 (AGRAHAYANA 10--PAUSA 10, 1885 S.F.A)

Sub-division and station	Hour of observation I. S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Okta)		Mean wind speed Kms. per hour	Wind speed (Km. p.h.)			No. of observations										
			At mean sea level or height in ft. of nearest standard barometric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction										
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable	
			19	20	21	22	23	24				25	26		27	28												
Madhya Pradesh (East) Ambikapur	0830	611	1019.4	948.6	+0.2	12.6	10.5	8.7	11.2	78	+3	1.4	+0.5	1.0	0	0	7	0	1	1	0	5	0	0	0	24	0	
	1730	"	1014.1	945.4	..	20.1	13.6	8.0	10.9	46	..	1.9	..	5.5	0	0	27	17	8	0	0	0	0	1	1	4	0	
	Pendra	0530	625	1017.4	945.0	..	11.7	8.9	5.9	9.4	69	..	1.3	..	3.6	0	0	23	13	3	0	0	1	1	1	4	8	0
		0830	"	1018.8	947.1	+0.2	15.2	11.0	7.0	10.1	59	-5	2.1	+0.5	4.1	0	0	25	13	3	0	0	2	0	2	5	6	0
Mandla	1130	"	1016.7	946.5	..	20.8	13.1	5.9	9.5	39	..	1.9	..	8.3	0	1	30	17	3	1	0	1	2	0	5	0	2	
	1730	"	1014.4	944.1	..	19.8	12.9	6.6	9.9	43	..	2.3	..	4.7	0	0	28	16	1	0	0	5	1	0	5	3	0	
	2330	"	1017.4	945.6	..	14.0	10.0	5.8	9.4	59	..	1.2	..	3.2	0	0	23	6	0	0	0	2	3	4	8	8	0	
	0830	443	1019.3	967.3	+0.1	12.2	10.2	8.2	10.9	77	-7	1.1	-0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0
Champa	1730	"	1013.7	963.6	..	21.2	14.5	8.3	11.1	45	..	1.4	..	0.3	0	0	2	1	0	0	0	0	0	0	0	1	29	0
	0830	245	1018.5	989.6	+0.4	15.5	12.6	9.8	12.3	70	0	2.9	+1.2	4.1	0	0	28	20	5	0	0	0	0	0	0	3	3	0
Raigarh	1730	"	1014.0	986.1	..	23.3	16.8	11.6	13.8	48	..	3.1	..	2.1	0	0	20	13	2	0	0	0	0	1	4	11	0	
	0830	220	1017.9	992.1	0	17.5	13.5	9.9	12.3	62	-2	2.0	+0.6	3.1	0	0	29	1	23	4	1	0	0	0	0	2	0	
Raipur	1730	"	1013.1	988.0	..	24.1	16.4	10.4	12.4	43	..	2.5	..	1.0	0	0	10	5	4	1	0	0	0	0	0	21	0	
	0530	298	1016.2	981.1	..	14.2	11.7	9.2	11.7	72	..	1.3	..	2.1	0	0	14	2	6	2	1	2	0	0	0	17	1	
	0830	"	1018.2	983.5	+0.4	17.4	13.0	8.8	11.4	57	-7	2.4	+1.2	4.2	0	0	28	4	14	3	0	5	1	0	0	3	1	
	1130	"	1016.7	982.8	..	23.9	15.4	7.6	10.7	36	..	2.4	..	6.0	0	0	31	3	14	4	1	3	3	1	1	0	1	
Ranker	1730	"	1013.7	979.9	..	24.1	16.0	9.0	11.6	39	..	3.0	..	3.2	0	0	19	7	5	2	1	1	2	1	0	12	0	
	2330	"	1016.2	991.7	..	17.9	13.4	9.1	11.7	57	..	1.3	..	3.0	0	0	20	3	2	4	2	2	4	1	2	11	0	
	0830	402	1018.1	971.7	+0.5	16.8	13.6	10.9	13.0	69	-6	2.4	+0.7	0	0	0	0	0	0	0	0	0	0	0	0	31	0	
	1730	"	1013.4	968.3	..	24.0	16.4	10.3	12.5	43	..	1.8	..	0.4	0	0	6	3	1	0	0	0	1	0	1	25	0	
Jajajapur	0530	553	1016.2	952.2	..	12.3	11.5	10.8	12.9	91	..	2.1	..	0.5	0	0	3	0	0	1	0	0	0	0	0	0	24	0
	0830	"	1017.3	954.5	+0.4	16.2	13.6	11.6	13.7	74	-7	2.8	+0.6	0.9	0	0	7	0	4	3	0	0	0	0	0	3	5	0
	1130	"	1014.9	953.4	..	24.3	16.3	10.4	12.7	42	..	2.6	..	5.4	0	0	26	4	10	5	2	0	2	0	1	1	24	0
	1730	"	1012.5	951.0	..	23.5	16.6	11.8	13.9	48	..	3.4	..	1.0	0	0	7	1	3	0	0	0	1	1	1	24	0	
2330	"	1016.1	952.8	..	15.6	13.6	12.1	14.1	80	..	1.4	..	0.5	0	0	3	6	0	2	0	0	0	0	1	28	0		
Gujarat Region Dhosa	0830	186	1017.1	1001.0	+0.1	15.3	11.6	7.8	10.7	61	..	1.9	..	2.5	0	0	31	0	23	5	1	0	0	0	2	0	0	
	1730	"	1013.6	998.2	..	27.2	17.1	8.8	11.3	31	..	1.1	..	2.6	0	0	31	0	13	2	5	5	1	4	6	0	0	
Radhanpur	0630	30	1016.5	1013.0	..	16.3	13.5	10.6	13.2	71	..	0.8	..	6.4	0	0	30	2	13	12	1	0	1	0	1	1	0	
	1730	"	1014.7	1011.3	..	27.3	19.9	14.9	17.1	48	..	0.3	..	2.7	0	0	23	1	10	2	3	0	3	1	3	8	0	
Idar	0630	219	1016.8	991.4	..	19.7	13.3	6.6	10.1	44	..	2.8	..	4.7	0	0	24	1	17	4	0	0	0	1	1	7	0	
	1730	"	1013.2	988.4	..	25.7	16.9	9.1	12.2	37	..	2.1	..	1.7	0	0	19	0	4	9	2	0	0	4	0	12	0	
Ahmedabad	0230	55	1014.6	1008.1	..	17.8	13.7	9.9	12.3	61	..	1.5	..	10.1	0	5	18	1	11	8	0	0	0	0	3	8	0	
	0530	"	1014.4	1007.9	..	16.6	13.0	9.5	12.1	64	..	1.2	..	10.5	0	4	22	1	13	10	0	0	0	1	1	5	0	
	0830	"	1016.6	1010.0	-0.3	17.9	13.3	8.9	11.5	56	-4	2.4	+1.4	14.4	0	9	19	0	7	18	1	0	0	1	1	3	0	
	1130	"	1016.7	1010.3	..	25.5	16.4	8.2	11.2	34	..	2.0	..	19.2	0	17	13	2	1	19	6	1	0	0	1	1	0	
	1730	"	1013.2	1006.4	..	27.4	17.3	8.8	11.7	32	..	2.2	..	9.9	0	1	26	2	9	12	1	0	0	0	1	2	10	0
	2330	"	1015.5	1009.0	..	19.0	14.5	10.4	12.9	59	..	1.5	..	7.5	0	1	20	0	10	6	0	0	0	0	0	1	3	0
Dohad	0830	333	1017.0	978.2	-0.2	16.7	13.0	9.7	12.0	65	+5	1.4	0	5.4	0	0	28	0	5	9	8	2	3	1	0	3	0	
	1730	"	1012.6	975.3	..	26.8	16.8	8.3	11.0	32	..	1.3	..	5.8	0	1	28	3	11	2	9	0	2	4	1	2	0	
Vallabha Vidyanagar	0830	44	1015.8	1010.7	..	16.5	13.6	10.9	13.2	70	..	1.8	..	6.9	0	0	31	9	16	2	1	0	1	0	2	3	1	0
	1730	"	1012.7	1007.8	..	27.2	19.6	14.3	16.5	46	..	1.8	..	5.0	0	0	31	17	7	1	0	0	2	3	1	0	0	
Baroda Aerodrome	0830	58	1016.1	1011.6	..	18.1	14.7	12.0	13.9	68	..	1.5	..	9.2	0	0	27	13	11	3	0	0	0	0	0	0	4	0
	1330	"	1016.2	1011.8	..	26.0	17.8	11.4	13.7	41	..	1.4	..	13.4	0	8	22	5	17	6	2	0	0	0	0	1	0	
	1730	"	1012.8	1008.6	..	27.9	18.9	12.5	14.5	39	..	1.7	..	9.6	0	2	26	13	10	0	0	0	1	2	2	3	0	
Baroda	0530	34	1014.2	1010.0	..	16.7	14.3	12.3	14.4	76	..	1.4	..	0.5	0	0	5	0	4	1	0	0	0	0	0	26	0	
	0830	"	1016.3	1012.1	+0.2	17.1	14.3	11.9	14.0	72	-1	1.8	+0.8	1.0	0	0	11	0	11	0	0	0	0	0	0	20	0	
	1130	"	1016.4	1012.4	..	27.0	18.7	12.6	14.9	41	..	0.5	..	2.0	0	0	21	0	9	10	1	0	0	1	0	10	0	
	1730	"	1013.0	1009.1	..	28.3	20.3	14.9	17.4	45	..	2.0	..	0.3	0	0	5	0	4	0	0	0	0	0	1	0	26	0
	2330	"	1015.3	1011.2	..	19.5	15.9	13.1	15.2	67	..	1.2	..	0.6	0	0	7	0	6	0	0	0	0	0	1	0	24	0
Broach	0830	17	1015.3	1013.2	-0.4	17.0	14.2	12.0	13.9	72	+6	2.4	+1.2	4.4	0	0	31	2	16	3	9	0	0	1	0	0	0	
	1730	"																										

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—DECEMBER, 1963 (AGRAHAYANA 10— PAUSA, 10, 1885 SAKA)

Sub-Division and station	Hours of observation I. S. T.	Station elevation in metres		Mean pressure in millibars		Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Wind speed (Km. p.h.)			No. of observations											
		Station level	Departure from normal	Dry bulb	Wet bulb	Dew point	Mean amount	Departure from normal				Mean wind speed per hour	Wind direction															
													62 or more	20 to 61	1 to 19													
																N	NE	E	SE	S	SW	W	NW	Calm	Variable			
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28			
Kokate (Contd.) Bombay (Santa Cruz)	2330	15	1013.8	1012.1	..	21.7	18.5	16.4	18.8	73	..	1.5	..	3.4	0	1	16	4	6	7	0	0	0	0	0	0	14	0
	0830	..	1014.3	1013.1	-0.5	23.3	20.3	18.5	21.4	75	+5	3.2	+1.8	5.2	0	0	27	1	8	15	3	0	0	0	0	0	4	0
Bombay	1130	..	1014.4	1013.2	..	28.2	22.0	18.5	21.4	56	..	2.9	..	4.1	0	0	27	1	7	14	4	0	0	0	1	4	0	
	1730	..	1011.4	1010.2	..	27.5	22.9	20.5	24.1	66	..	3.4	..	5.7	0	0	30	3	0	0	0	0	1	4	22	1	0	
Alibaz	0830	7	1014.3	1013.5	-0.3	22.1	18.6	16.2	18.5	70	+6	2.4	+0.6	5.9	0	0	28	8	6	4	3	1	1	0	5	3	0	
Bhira	0830	96	1014.0	1002.9	..	21.4	16.8	13.3	15.4	63	..	3.1	..	2.9	0	0	21	4	4	7	6	0	1	0	1	10	0	
	1730	..	1009.8	999.2	..	29.1	21.3	16.6	19.0	48	-5	2.4	..	2.8	0	0	23	0	1	2	12	6	1	1	0	8	0	
Harnai	0830	20	1013.9	1011.5	+0.1	25.7	19.1	14.4	16.7	51	..	4.3	+2.4	8.6	0	5	21	5	4	12	3	2	0	0	0	5	0	
	1730	..	1010.9	1008.6	..	27.8	22.8	20.2	23.7	64	..	3.6	..	20.3	0	16	15	2	0	0	0	1	0	4	24	0	0	
Ratnagiri	0830	35	1013.9	1006.8	-0.2	23.6	19.0	15.9	18.2	64	..	2.7	..	8.2	0	2	29	0	0	17	14	0	0	0	0	0	0	
	1730	..	1010.6	1009.6	..	28.9	23.3	20.3	24.1	60	+4	3.0	..	6.9	0	0	31	3	0	1	0	0	0	0	7	20	0	
Devgarh	0830	36	1013.6	1009.5	0	23.8	20.3	18.1	21.0	71	..	3.2	+1.2	9.3	0	1	30	0	4	24	3	0	0	0	8	22	0	
	1730	..	1010.3	1006.3	..	29.3	24.1	21.6	25.8	64	..	3.1	..	19.5	0	12	19	1	0	0	0	0	0	0	0	0	26	0
Vengurla	0230	9	1011.9	1010.9	..	22.0	20.9	20.3	23.8	90	..	1.1	..	1.1	0	0	5	5	0	0	0	0	0	0	0	0	25	0
	0530	..	1011.9	1010.9	..	20.9	19.7	19.1	22.0	89	..	1.6	..	0.8	0	1	6	5	1	0	0	0	0	0	0	0	20	0
	0830	..	1014.1	1013.1	0	22.6	20.1	18.6	21.6	79	+7	2.5	+0.9	2.1	0	0	11	8	2	1	0	0	0	0	0	0	4	0
	1130	..	1013.7	1012.7	..	30.6	22.2	17.3	19.9	46	..	2.5	..	5.9	0	0	27	1	5	6	6	1	2	6	0	4	6	0
	1730	..	1010.6	1009.6	..	29.2	23.7	20.9	24.7	61	..	2.6	..	5.3	0	0	25	0	0	0	0	0	3	18	4	6	0	0
	2330	..	1013.2	1012.2	..	23.2	21.6	20.8	24.6	87	..	1.7	..	2.4	0	0	15	13	0	0	0	0	1	0	1	1	16	0
Marmagao	0520	62	1012.7	1005.6	..	23.3	20.6	18.8	22.1	77	..	3.2	..	8.5	0	0	17	0	3	13	1	0	0	0	0	0	0	0
	0830	..	1014.9	1007.8	..	24.9	20.2	17.2	19.7	64	..	3.8	..	10.3	0	1	16	0	3	12	2	0	0	0	0	0	0	0
	1130	..	1014.4	1007.5	..	29.0	21.4	16.7	19.3	48	..	3.2	..	9.2	0	1	16	1	7	4	1	1	2	1	0	0	0	
	1730	..	1011.3	1004.4	..	28.3	22.7	19.7	22.9	60	..	3.2	..	13.2	0	0	17	0	0	9	0	4	11	2	0	0	0	
Madhya Maharashtra Nandurbar	0830	206	1016.5	992.6	..	20.4	16.3	13.1	15.2	63	..	0.8	..	6.3	0	0	28	1	1	23	1	1	0	1	0	3	0	
	1730	..	1012.2	989.0	..	27.7	20.6	16.2	18.5	50	..	0.9	..	3.8	0	0	29	1	3	22	0	0	0	3	0	2	0	
Jalgaon	0830	201	1017.3	993.7	+0.7	16.6	12.7	8.9	11.5	61	-2	2.8	+1.3	10.5	0	0	29	0	1	16	11	0	0	1	0	5	2	0
	1730	..	1012.3	989.7	..	27.8	18.1	10.6	12.9	35	..	3.5	..	7.5	0	0	29	1	8	14	1	0	0	0	5	2	0	
Malegaon	0830	437	1017.5	966.9	+0.2	16.0	12.7	9.7	12.0	67	+10	2.7	+1.1	5.4	0	0	29	3	2	0	1	0	4	6	13	2	0	
	1730	..	1011.7	963.3	..	27.6	17.2	8.3	11.2	40	..	3.5	..	7.6	0	0	31	1	8	10	1	1	0	2	2	0	0	
Deolali (Aerodrome)	0830	571	1017.9	952.2	..	15.9	12.5	9.7	12.0	67	..	3.5	..	5.3	0	0	24	16	3	2	1	0	0	1	1	7	0	
	1730	..	1011.6	948.9	..	27.9	17.0	8.6	11.4	31	..	3.2	..	7.2	0	0	28	2	10	6	1	1	2	4	2	3	0	
Ahmadnagar	0830	657	1016.9	942.4	+0.1	18.1	13.1	8.8	11.4	55	0	3.1	+1.7	4.1	0	0	19	0	1	0	4	3	4	1	6	12	0	
	1730	..	1010.4	938.9	..	28.3	17.0	8.6	11.2	30	..	3.4	..	9.9	0	0	24	2	15	0	5	3	1	0	2	3	0	
Poona (Aerodrome)	0230	593	1014.4	947.0	..	17.5	13.5	10.2	12.5	63	..	1.3	..	6.3	0	0	20	2	5	8	1	0	0	4	0	11	0	
	0530	..	1014.7	947.0	..	16.0	12.7	9.7	12.1	66	..	1.7	..	6.6	0	1	18	1	5	6	0	0	0	6	1	12	0	
	0830	..	1016.3	948.9	..	18.2	13.7	9.8	12.4	60	..	3.7	..	8.3	0	3	21	2	9	6	1	1	0	4	1	7	0	
	1130	..	1014.2	948.8	..	26.7	16.9	9.5	12.1	35	..	3.2	..	15.6	0	13	17	1	5	18	4	0	1	1	0	1	0	
	1730	..	1010.1	945.2	..	28.7	16.9	7.7	10.7	28	..	3.1	..	14.8	0	9	18	0	4	12	2	0	3	4	2	4	0	
	2330	..	1014.8	947.9	..	19.8	14.5	10.1	12.7	55	..	1.8	..	8.0	0	1	25	1	7	7	1	1	1	6	2	5	0	
Poona	0530	559	1015.4	950.8	..	13.2	11.3	9.7	12.0	79	..	1.0	..	0.1	0	0	1	0	0	0	0	0	0	1	0	30	0	
	0830	..	1016.6	952.8	0	17.4	13.9	11.1	13.3	67	+4	2.8	+1.4	0.3	0	0	4	2	0	2	0	0	0	0	0	0	27	0
	1130	..	1014.2	952.3	..	26.2	17.9	12.3	14.5	43	..	2.8	..	3.1	0	0	21	1	5	12	3	0	0	0	0	10	0	
	1730	..	1010.2	949.0	..	28.3	17.8	10.6	12.7	34	..	3.2	..	2.9	0	0	15	1	1	5	2	0	1	4	1	16	0	
	2330	..	1015.3	951.5	..	17.2	13.6	10.6	12.9	66	..	1.2	..	0.1	0	0	1	0	0	0	0	0	1	0	0	30	0	
Jeur	0830	521	1016.4	956.8	-0.1	17.3	13.0	9.5	11.9	60	+1	3.5	+1.9	2.3	0	0	14	3	4	5	2	0	0	0	0	1	0	
	1730	..	1010.4	953.3	..	28.7	17.5	9.7	11.9	31	..	3.2	..	6.6	0	1	23	1	7	7	5	2	1	0	1	7	0	
Baramati	0830	551	1016.3	953.7	-0.1	18.9	14.3	10.7	12.9	62	-4	(a) 2.2 (b) 2.7	+0.8	(a) 4.1 (b) 6.1	0	0	28	3	7	7	6	0	0	2	3	2	0	
	1730	..	1010.3	950.1	..	28.9	18.8	12.3	14.3	37	..	..	..	..	0	0	27	1	3	9	9	2	2	0	1	2	0
Sholapur	0530	479	1014.6	959.8	..	17.5	13.7	10.6	12.9	65	..	1.7	..	5.5	0	0	26	2	9	9	4	1	0	1	0	5	0	
	0830	..																										

Sub-Division and station	Hours of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Okta)		Wind speed (Km. p.h.)			No. of observations										
			At mean sea level or height in g.p.m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal	Mean wind speed Km. per hour	62 or more	20 to 61	1 to 19	Wind direction									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Madhya Maharashtra (—(Contd.—)																											
Kolhapur—(Contd.)	2330	570	1013.9	949.8	..	20.7	16.0	12.6	14.8	61	..	1.3	..	7.3	0	0	26	1	5	8	1	0	4	7	0	5	0
Marathwada																											
Aurangabad	0830	581	1017.1	971.3	0	19.7	13.7	8.6	11.3	50	-3	2.7	+1.0	2.5	0	0	15	1	1	12	0	0	0	1	0	16	0
1730	..	..	1011.6	947.8	..	27.6	16.8	8.5	11.2	31	..	3.3	..	3.6	0	1	11	1	2	6	0	0	0	3	0	19	0
Aurangabad (Chikalthan)	0230	579	1015.8	948.9	..	13.2	10.0	6.7	9.9	65	..	0.9	..	1.3	0	0	4	0	0	1	1	0	0	1	1	27	0
0530	..	..	1016.2	948.9	..	11.9	9.0	6.1	9.4	68	..	1.4	..	1.2	0	0	3	0	0	0	2	0	0	1	0	28	0
0830	..	..	1016.8	951.1	..	19.3	13.7	9.0	11.5	52	..	2.4	..	3.7	0	0	12	0	0	6	5	0	0	0	1	19	0
1130	..	..	1015.0	950.9	..	25.8	17.2	11.2	13.4	41	..	2.4	..	13.4	0	1	28	0	0	12	15	1	1	0	0	2	0
1730	..	..	1011.3	947.6	..	27.0	17.5	10.8	13.0	37	..	3.0	..	8.5	0	2	18	0	1	7	7	1	1	2	1	11	0
2330	..	..	1016.4	949.9	..	15.2	11.3	7.7	10.6	61	..	0.9	..	2.2	0	0	6	0	0	2	2	0	0	1	1	25	0
Parbhani	0830	423	1017.7	968.9	+1.1	17.7	13.0	8.5	11.2	55	-3	2.5	+0.8	2.1	0	0	20	3	11	3	1	0	0	1	1	11	0
1730	..	..	1012.3	965.3	..	27.1	17.5	9.9	12.2	35	..	3.2	..	3.8	0	0	24	2	10	10	1	0	0	1	0	7	0
Nander	0830	358	1017.3	975.9	..	18.6	14.6	11.1	13.4	62	..	1.7	..	0.5	0	0	3	1	1	0	1	0	0	0	0	28	0
1730	..	..	1012.0	972.1	..	28.3	18.7	11.6	13.7	36	..	1.7	..	1.8	0	0	11	0	5	2	2	0	1	0	1	20	0
Bir	0830	519	1017.3	958.1	..	18.6	15.1	12.5	14.6	68	..	1.0	..	1.7	0	0	12	0	6	0	3	1	2	0	0	19	0
1730	..	..	1012.1	954.8	..	27.0	19.3	14.5	16.7	48	..	2.0	..	4.4 (a)	0	0	25	2	19	2	1	0	0	0	1	5	0
Vidarbha																											
Gondia	0830	313	1018.4	981.9	+0.4	15.9	12.4	9.2	11.5	64	-7	2.7	+1.3	1.7	0	0	21	6	9	4	0	0	0	0	2	10	0
1730	..	..	1013.7	978.4	..	25.1	16.2	8.3	11.1	35	..	2.6	..	2.5	0	0	24	9	1	2	0	3	3	1	5	7	0
Nagpur (Songeaon)	0230	310	1015.6	979.3	..	14.4	11.5	8.6	11.3	68	..	1.5	..	3.8	0	0	23	11	2	3	0	0	0	1	6	8	0
0530	..	..	1016.1	979.6	..	12.9	10.7	8.2	11.1	74	..	1.5	..	3.7	0	0	20	8	0	2	0	0	0	0	10	11	0
0830	..	..	1018.1	981.9	+0.2	16.6	12.5	8.4	11.2	59	-3	2.6	+0.9	3.5	0	0	23	12	4	4	0	0	0	1	2	8	0
1130	..	..	1016.3	981.2	..	24.8	15.6	7.1	10.3	33	..	2.3	..	7.2	0	0	28	3	7	12	5	0	1	0	0	3	0
1730	..	..	1013.2	978.2	..	24.6	15.9	8.2	11.1	36	..	2.9	..	5.2	0	0	28	1	10	11	2	3	1	0	0	3	0
2330	..	..	1016.4	980.2	..	15.9	12.3	8.7	11.4	63	..	1.5	..	3.9	0	0	25	6	7	3	0	0	0	4	5	6	0
Amraoti	0830	376	1017.4	974.9	+0.3	20.0	13.2	6.3	9.6	42	-9	2.5	+0.9	2.3	0	0	26	3	14	8	0	1	0	0	0	5	0
1730	..	..	1012.3	971.1	..	27.4	15.9	5.2	8.8	25	..	2.6	..	4.3	0	0	30	4	4	0	10	5	3	3	1	1	0
Akola Aerodrome	0530	309	1015.0	978.8	..	14.5	10.2	5.2	9.0	54	..	2.1	..	7.3	0	0	29	4	6	9	3	1	1	3	2	2	0
0830	..	..	1016.9	981.0	..	17.8	12.1	6.2	9.5	47	..	3.3	..	6.1	0	0	28	1	8	10	4	2	3	0	0	3	0
1130	..	..	1015.8	980.8	..	25.6	15.8	6.7	9.8	31	..	3.2	..	7.7	0	0	31	2	12	5	6	0	2	3	1	0	0
1730	..	..	1011.9	997.3	..	27.4	16.5	6.6	9.9	27	..	3.4	..	6.1	0	0	29	9	12	2	1	0	1	2	2	2	0
2330	..	..	1015.1	979.4	..	19.3	12.7	5.7	9.3	41	..	2.1	..	7.7	0	0	31	3	6	7	7	2	0	3	3	0	0
Akola	0830	282	1017.4	984.6	+0.1	16.7	12.7	9.0	11.5	61	+4	1.5	-0.1	0.1	0	0	1	0	1	0	0	0	0	0	0	30	0
1730	..	..	1012.2	980.6	..	27.8	18.2	10.8	13.1	35	..	2.6	..	0.3	0	0	5	0	0	3	0	0	0	1	1	26	0
Bramhapuri	0830	229	1018.0	991.1	..	16.3	13.5	11.1	13.2	72	..	2.6	..	2.0	0	0	25	7	6	3	0	2	0	0	0	7	6
1730	..	..	1013.5	987.6	..	26.0	17.1	9.7	12.3	37	..	2.8	..	1.8	0	0	23	6	8	5	4	0	0	0	0	8	0
Buldhana	0830	650	1016.8	943.3	+0.6	18.8	13.1	8.2	10.9	50	-4	2.3	+0.8	4.5	0	0	26	0	1	1	12	5	6	0	1	5	0
1730	..	..	1012.0	940.5	..	25.7	16.1	8.8	11.2	35	..	2.8	..	4.5	0	0	21	1	10	3	3	0	2	0	2	10	0
Yeotmal	0830	451	1016.8	965.3	0	19.7	13.0	6.0	9.5	42	-11	3.0	+1.2	7.1	0	0	30	2	3	20	0	4	1	0	0	1	0
1730	..	..	1012.3	962.1	..	25.8	15.7	6.2	9.8	29	..	3.7	..	5.0	0	0	31	9	7	12	0	1	0	1	1	0	0
Chanda	0830	193	1017.4	994.7	-0.2	16.4	13.7	11.4	13.5	73	+1	2.3	+0.8	3.0	0	0	26	7	2	2	3	2	2	3	5	5	0
1730	..	..	1013.1	991.2	..	25.9	18.2	12.4	14.5	43	..	..	..	3.8	0	0	25	4	10	8	1	1	0	0	1	6	0
Pusad	0830	334	1018.2	979.4	..	16.6	13.2	10.0	12.4	66	..	2.2	..	2.5	0	0	25	1	1	2	1	0	4	1	15	6	0
1730	..	..	1013.2	975.6	..	27.8	19.3	13.3	15.5	41	..	2.6	..	6.6	0	0	31	2	16	10	0	1	0	2	0	0	0
Sironcha	0830	123	1017.9	1003.4	+0.7	18.2	15.9	14.3	16.2	78	0	2.8	+1.0	2.7	0	0	30	15	4	2	4	1	1	1	2	1	0
1730	..	..	1013.4	999.4	..	27.0	19.2	13.8	15.9	45	..	2.4	..	2.8	0	0	30	8	11	4	7	0	0	0	0	1	0
Coastal Andhra Pradesh																											
Kalingapatnam	0830	6	1016.9	1016.2	+0.1	22.3	19.6	18.1	20.5	77	-1	1.9	0	6.6	0	0	31	10	5	1	0	0	0	1	14	0	0
1730	..	..	1013.5	1012.8	..	24.7	21.3	19.4	22.5	73	..	1.8	..	10.6	0	1	30	5	2	2	10	5	1	0	1	0	0
Vishakhapatnam																											
0230	3	1014.1	1013.7	..	21.2	19.0																					

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—DECEMBER, 1963 (AGRAHAYANA 10—PAUSA 10, 1885 SAKA)

Sub-Division and station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars.			Mean temperature in °C.			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Mean wind speed, Kms. per hour	Wind speed (km p.h.)			No. of observations										
			At mean sea level or height in g.p.m. of nearest standard isobatic level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction										
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Coastal Andhra Pradesh—(Contd.) Guntavaram	0230	24	1013.6	1010.8	..	21.4	20.0	19.3	22.2	88	..	2.9	..	6.1	0	0	24	12	10	1	0	0	0	0	0	1	7	0
	0550	"	1013.9	1011.1	..	20.8	19.5	18.7	21.6	88	..	3.1	..	6.3	0	1	19	8	11	1	0	0	0	0	0	0	11	0
	0830	"	1016.3	1013.5	+0.4	23.6	20.7	19.0	22.1	76	+4	4.0	+1.7	9.3	0	1	25	7	13	6	0	0	0	0	0	0	3	0
	1130	"	1015.4	1012.6	..	27.7	21.7	18.4	21.0	57	..	4.2	..	11.9	0	4	24	3	8	13	1	3	0	0	0	0	3	0
	1730	"	1012.7	1010.0	..	27.3	21.4	17.9	20.8	57	..	4.0	..	8.0	0	1	27	1	3	18	4	1	1	0	0	0	3	0
	2330	"	1015.0	1012.2	..	22.0	20.4	19.5	22.7	86	..	3.1	..	5.7	0	0	24	7	9	3	0	0	1	0	4	7	0	
Nagarjuna Konda (R)	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Musulipatanam	0830	3	1016.1	1015.7	-0.2	22.9	20.7	19.6	22.7	82	+4	4.3	+2.3	2.8	0	0	22	8	12	2	0	0	0	0	0	0	9	0
Ongole	0830	12	1015.8	1014.5	..	23.7	23.1	22.7	27.7	95	..	4.0	..	3.3	0	0	24	2	17	0	0	0	0	1	4	7	0	
Nellore	0530	20	1012.8	1010.6	..	21.6	20.9	20.5	24.1	93	..	3.2	..	0.2	0	0	1	0	1	0	0	0	0	0	0	0	30	0
Elanjanga Ramgundam	0830	156	1016.6	998.0	-0.8	17.8	15.6	13.8	16.0	78	+10	2.4	+0.7	1.5	0	0	13	3	5	1	2	2	0	0	0	0	18	0
Nizamabad	0830	381	1017.2	973.2	+0.7	19.0	15.2	13.3	14.2	76	+9	2.0	+0.4	0.1	0	0	1	0	0	0	0	0	0	0	1	0	30	0
Hanamkonda	0830	269	1016.8	985.9	-0.1	19.7	16.7	14.5	16.5	73	+3	1.8	-0.4	1.3	0	0	21	13	0	0	2	5	0	1	0	10	0	
Hakimpet (Aerodrome)	0530	613	1014.7	945.1	..	17.2	14.1	11.2	13.3	71	..	2.2	..	11.6	0	0	30	0	8	9	10	2	0	1	0	1	0	
Bladrachallam	0830	111	1017.0	1003.9	-0.4	19.3	17.5	16.3	18.5	83	+4	5.5	+2.6	2.7	0	0	31	2	11	3	2	2	9	0	2	0	0	
Hydrabad (Begampet)	0230	545	1014.7	952.5	..	16.6	14.3	12.5	14.7	78	..	1.7	..	1.5	0	0	8	0	1	2	5	0	0	0	0	0	23	0
Khanamam	0830	112	1016.5	1003.5	..	21.4	18.5	16.5	18.8	74	..	4.4	..	1.7	0	0	16	7	1	8	0	0	0	0	0	0	15	0
Mahbubnagar	0830	505	1015.1	958.8	..	22.0	17.3	14.1	16.3	62	..	4.1	..	10.3	0	1	27	0	7	17	3	0	1	0	0	0	3	0
Rayalaseema Kurnool	0830	281	1015.5	983.5	..	21.4	18.0	15.6	17.8	70	-1	3.9	..	4.4	0	0	31	0	9	0	21	0	1	0	0	0	0	0
Anantapur	0530	350	1013.3	973.2	..	19.4	17.0	15.3	17.4	78	..	3.0	..	3.4	0	0	15	0	2	10	3	0	0	0	0	0	16	0
Cuddapah	0830	130	1015.4	975.6	..	22.1	18.6	16.2	18.5	70	-2	4.0	+1.6	3.5	0	0	17	1	1	12	3	0	0	0	0	0	14	0
Arogyavaram	0830	701	1015.5	937.1	..	0.0	17.7	16.3	18.5	80	..	3.8	..	3.3	0	0	21	4	6	2	4	1	1	2	1	10	0	
Madras State Madras (Minambakkam)	0230	16	1012.4	1010.6	..	22.8	21.5	20.8	24.7	89	..	4.1	..	3.3	0	0	13	8	3	2	0	0	0	0	2	2	17	0
	0530	"	1011.7	1010.9	..	22.2	21.3	20.8	24.7	91	..	4.1	..	3.9	0	2	12	8	1	1	0	0	0	0	0	8	5	0
	0830	"	1015.1	1013.3	+0.2	24.2	22.1	20.9	24.9	82	-2	4.8	+0.8	7.7	0	2	24	12	5	1	0	0	0	0	0	1	0	1
	1130	"	1014.4	1012.6	..	27.3	22.5	19.9	23.4	65	..	5.1	..	10.5	0	2	29	16	7	5	0	1	0	0	0	1	0	1
	1730	"	1012.2	1010.4	..	25.8	22.1	20.0	23.5	71	..	4.4	..	11.5	0	3	28	10	15	4	2	0	0	0	0	0	0	0

(R) Register not received.

Sub-Division and station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C				Relative humidity %	Departure from normal	Cloud amount Oktas			Wind speed (Km.p.h.)			No. of observations												
			At mean sea level or height in g.p.m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point	Vapour pressure in mbe.			Mean amount	Departure from normal	Mean wind speed Km.s. our	Wind direction			N	NE	E	SE	S	SW	W	NW	Calm	Variable			
															62 or more	20 to 61	1 to 19													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
Madras State—Contd.																														
Madras (Minambakkam)	2330	16	1014.2	1012.4	..	23.4	21.7	20.7	24.6	85	..	4.0	..	6.6	0	0	24	10	10	4	0	0	0	0	0	0	0	0	0	
Vellore	0530	214	1013.3	988.7	..	20.3	19.9	19.6	22.8	96	..	3.9	..	0.6	0	0	2	0	2	0	0	0	0	0	0	0	0	29	0	
	0830	"	1015.6	990.9	+0.5	21.5	20.6	20.1	23.5	92	+7	5.5	+2.2	1.6	0	0	14	1	6	0	0	0	0	3	2	3	7	0		
	1130	"	1014.7	990.4	..	25.6	21.6	19.2	22.2	68	..	5.2	..	7.7	0	3	20	4	14	3	0	0	0	0	0	0	2	8	0	
	1730	"	1011.5	987.4	..	26.3	21.7	18.4	21.1	63	..	4.5	..	7.2	0	0	27	0	17	10	0	0	0	0	0	0	0	4	0	
	2330	"	1014.6	990.1	..	22.7	21.0	20.1	23.5	80	..	4.3	..	3.9	0	1	17	0	10	8	0	0	0	0	0	0	0	13	0	
Tambaraw Aerodrome	0830	29	1014.6	1011.2	..	24.3	22.8	22.1	26.6	88	..	4.7	..	9.0	0	0	28	12	6	0	0	1	0	2	7	3	0	0		
	1730	"	1011.8	1008.5	..	25.5	22.3	20.6	24.3	75	..	4.9	..	16.1	0	4	26	3	22	3	1	1	0	0	0	0	1	0	0	
Tiruppattur	0830	390	1015.1	970.7	..	20.3	19.5	18.9	22.0	92	..	6.6	..	2.6	0	0	28	27	1	0	0	0	0	0	0	0	0	3	0	
	1730	"	1010.8	967.2	..	24.7	20.7	18.2	21.1	69	..	5.5	..	7.5	0	0	31	25	5	0	0	1	0	0	0	0	0	0	0	
Matrur Dam R. S.	0830	"	..	..	..	23.2	20.9	19.6	22.9	30	..	4.3	..	4.6	0	0	27	0	12	0	0	0	0	0	0	0	15	4	0
	1730	"	..	..	..	26.5	23.2	21.3	25.6	75	..	4.2	..	4.8	0	0	30	0	15	0	2	0	0	0	0	0	13	1	0
Cuddalore	0530	12	1011.9	1010.5	..	22.3	21.5	21.0	25.0	92	..	5.0	..	3.0	0	1	11	7	2	0	0	0	0	1	0	2	19	0		
	0830	"	1014.4	1013.0	-0.1	23.9	22.3	21.5	25.6	86	-3	5.6	+1.4	7.0	0	1	29	15	8	0	0	1	0	0	0	6	1	0	0	
	1130	"	1013.9	1012.5	..	27.0	23.2	21.2	25.3	71	..	5.7	..	14.6	0	7	24	10	20	0	1	0	0	0	0	0	0	0	0	
	1730	"	1011.5	1010.2	..	25.9	22.6	20.9	24.7	75	..	4.0	..	12.9	0	2	29	4	25	2	1	0	0	0	0	1	0	0	0	
	2330	"	1013.6	1012.2	..	24.0	22.2	21.2	23.3	84	..	4.6	..	8.2	0	3	28	8	18	1	0	0	0	0	0	4	0	0	0	
Kanjikurichi	0830	127	1014.6	1000.1	..	23.4	21.6	20.6	24.3	85	..	4.5	..	8.9	0	1	30	8	0	0	1	0	0	0	1	21	0	0	0	
	1730	"	1011.2	996.9	..	26.4	22.3	20.0	23.5	68	..	4.4	..	7.3	0	0	30	2	24	1	0	0	0	0	0	3	1	0	0	
Salem	0530	278	1012.8	980.9	..	20.4	18.8	17.9	20.4	86	..	4.1	..	2.3	0	0	16	1	4	11	0	0	0	0	0	0	15	0	0	
	0830	"	1014.7	983.1	+0.2	22.7	20.0	18.3	21.3	77	+2	4.7	+1.6	2.0	0	0	11	1	4	5	1	0	0	0	0	0	20	0	0	
	1130	"	1013.5	982.3	..	27.2	21.1	17.4	20.0	56	..	5.1	..	5.5	0	0	25	0	7	15	1	0	0	0	1	1	6	0	0	
	1730	"	1010.3	979.3	..	29.2	20.9	17.0	19.6	56	..	4.2	..	6.3	0	0	26	1	3	21	1	0	0	0	0	0	5	0	0	
	2330	"	1013.6	981.9	..	22.7	19.9	13.1	20.9	76	..	4.0	..	3.8	0	0	17	0	5	11	1	0	0	0	0	0	14	0	0	
Coimbatore (Pilamedu)	0530	399	1013.0	967.6	..	19.7	19.0	18.6	21.3	93	..	4.5	..	5.4	0	0	17	5	7	3	0	0	0	0	0	2	14	0	0	
	0830	"	1015.1	969.8	..	21.6	19.9	18.8	21.8	85	..	5.1	..	8.7	0	0	24	5	12	4	1	0	1	0	1	7	0	0	0	
	1130	"	1013.6	969.1	..	25.3	20.7	17.9	20.6	65	..	4.6	..	12.4	0	4	24	2	22	4	0	0	0	0	0	0	3	0	0	
	1730	"	1010.4	966.1	..	26.4	20.8	17.2	20.0	59	..	4.0	..	11.1	0	1	27	0	15	13	0	0	0	0	0	0	3	0	0	
	2330	"	1013.9	968.7	..	21.5	19.7	18.5	21.4	83	..	4.0	..	4.5	0	0	16	3	9	3	0	0	1	0	0	0	15	0	0	
Coimbatore	0530	409	1014.7	968.5	+0.3	21.8	19.7	18.4	21.3	81	+2	5.3	+1.5	16.3	0	4	27	9	15	7	0	0	0	0	0	0	0	0	0	0
	1730	"	1010.4	965.1	..	26.5	20.6	16.8	19.5	59	..	4.6	..	15.9	0	4	27	0	7	15	9	0	0	0	0	0	0	0	0	0
Nagapattinam	0830	9	1014.1	1013.0	+0.3	25.0	22.6	21.3	25.5	81	0	5.3	+0.3	13.0	0	5	25	7	9	0	1	0	0	0	0	0	13	1	0	0
	1730	"	1011.0	1009.9	..	26.3	23.0	21.3	25.3	75	..	5.2	..	22.1	0	19	12	8	19	0	1	0	0	0	0	0	3	0	0	0
Tiruchchirappalli	0230	88	1012.0	1001.9	..	22.3	21.2	20.6	24.4	90	..	3.9	..	13.7	0	8	20	8	13	1	1	0	0	0	2	3	3	0	0	0
	0530	"	1012.2	1002.1	..	21.7	20.8	20.2	23.8	91	..	4.3	..	10.6	0	1	24	9	12	0	0	0	0	0	2	2	6	0	0	0
	0830	"	1014.3	1004.2	-0.3	23.9	21.7	20.5	24.1	81	+1	4.5	+0.7	11.9	0	5	23	10	12	1	0	0	0	0	3	2	3	0	0	0
	1130	"	1013.6	1003.7	..	26.7	22.4	20.1	23.5	68	..	4.9	..	16.4	0	11	20	8	15	4	0	0	0	0	0	4	0	0	0	0
	1730	"	1010.8	1000.9	..	26.6	22.6	20.4	24.1	70	..	4.6	..	12.7	0	8	19	2	15	8	0	0	0	0	1	1	4	0	0	0
	2830	"	1013.6	1003.5	..	22.9	21.6	20.8	24.7	88	..	4.2	..	11.2	0	4	22	4	14	5	1	0	0	0	0	2	5	0	0	0
Vedaranniyam	0830	4	1013.5	1013.0	..	24.5	22.9	22.1	26.6	87	..	4.5	..	2.2	0	0	25	12	12	0	0	0	0	0	0	1	6	0	0	0
	1730	"	1010.7	1010.2	..	26.0	23.6	22.4	27.1	81	..	4.5	..	2.8	0	2	27	14	12	0	0	0	0	0	0	1	4	0	0	0
Atirampattinam	0830	6	1013.7	1013.0	..	24.1	22.6	21.9	26.3	87	..	5.0	..	10.8	0	2	28	19	1	0	1	0	0	0	0	0	9	1	0	0
	1730	"	1010.7	1010.0	..	26.4	23.3	21.8	25.9	76	..	4.8	..	12.0	0	0	29	8	18	0	2	1	0	0	0	2	0	0	0	0
Madurai	0830	133	1014.2	999.0	+0.1	24.3	21.5	19.9	23.4	77	0	3.8	0.4	5.3	0	0	23	18	8	1	0	0	0	0	0	1	3	0	0	0
	1730	"	1010.7	995.6	..	27.2	22.5	19.9	23.5	65	..	3.0	..	6.0	0	26	31	5	14	5	2	0	0	0	0	1	0	4	0	0
Madurai Aerodrome	0530	131	1011.9	996.9	..	22.0	20.8	20.1	23.5	89	..	4.3	..	8.1	0	1	23	3	18	2	0	0	0	0	1	0	7	0	0	0
	1830	"	1014.1	999.0	..	24.2	21.7	20.3	23.8	79	..	4.5	..	11.0	0	4	24	11	16	0	0	0	0	0	1	0	3	0	0	0
	1130	"	1013.3	998.4	..	27.0	22.6	20.2	23.8	62	..	5.3	..	17.3	0	14	15	5	19	5	0	0	0	0	0	0	2	0	0	0
	1730	"	1010.4	995.6	..	27.1	22.6	20.2	23.8	67	..	4.3	..	15.7	0	9	22	2	17	11	1	0	0	0	0	0	0	0	0	0
Tondi	0830	5	1014.1	1013.5	..	24.1	22.4	21.5	25.6	85	..	4.6	..	7.2	0	0	30	18	6	0	0	0	0	0	0	6	1	0	0	0
	1730	"	1011.0	1010.4	..	26.9	23.6	22.0	26.3	75	..	4.3	..	12.7	0	3	28	3	20	2	2	1	0	0	0	3	0	0	0	0
Pamban	0830	11	1013.6	1012.3	+0.3	25.5	23.9	23.1	28.3	87	+2																			

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—DECEMBER, 1963 (AGRAHAYANA 10—PAUSA 10, 1885 SAKA)

Sub-Division and station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Wind speed (K.m.p.h.)			No. of observations										
			At mean sea level or height in g. p. m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal	Mean wind speed km. per hour	Wind direction			Wind direction									
															62 or more	20 to 61	1 to 19	N	NE	E	SE	S	SW	W	NW	Calm	Variable
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Coastal Mysore Karwar	0830	4	1013.4	1012.9	-0.5	23.7	20.7	19.1	22.0	76	+6	2.5	+0.5	5.4	0	1	28	2	6	16	2	0	1	0	0	2	2
	1730	..	1009.1	1008.6	..	29.7	23.7	20.5	24.4	59	..	2.7	..	9.5	0	0	31	0	2	0	5	2	1	2	18	0	1
Honavar	0830	26	1013.8	1010.8	+0.4	24.3	20.4	18.1	20.8	69	+7	4.5	+1.5	5.7	0	0	26	0	7	19	0	0	0	0	0	5	0
	1730	..	1009.8	1000.8	..	30.0	24.5	21.7	25.9	61	..	4.5	..	5.3	0	0	30	0	2	2	0	1	6	17	2	1	0
Mangalore (Bajpe)	0230	102	1011.1	999.5	..	23.4	21.5	20.5	24.1	84	..	2.8	..	3.1	0	0	14	0	0	11	3	0	0	0	0	17	0
	0530	..	1011.2	999.6	..	22.7	20.6	19.4	22.7	82	..	2.6	..	7.2	0	0	28	0	2	23	3	0	0	0	0	3	0
	0830	..	1013.3	1001.7	..	24.7	21.3	19.3	22.5	73	..	3.6	..	6.8	0	0	26	0	4	20	2	0	0	0	0	5	0
	1130	..	1012.6	1001.2	..	29.7	22.3	18.0	20.9	51	..	3.4	..	7.9	0	0	27	0	2	15	6	1	0	3	0	4	0
	1730	..	1019.4	998.0	..	28.7	23.0	19.9	23.5	60	..	3.5	..	9.7	0	0	30	1	0	1	1	0	0	15	12	1	0
	2330	..	1012.4	1000.9	..	24.9	22.3	20.9	24.7	79	..	3.0	..	1.9	0	0	11	3	1	1	2	2	0	0	2	20	0
Mangalore	0830	22	1013.3	1010.8	0	25.6	21.8	19.6	22.9	70	+3	3.8	+1.4	4.5	0	0	31	0	2	26	2	0	0	0	0	0	1
Interior Mysore (North) Bidar	1730	..	1009.7	1007.2	..	29.4	24.4	21.8	26.4	65	..	4.6	..	5.0	0	0	31	3	0	1	0	0	2	10	13	0	2
	0830	664	1016.2	942.3	..	19.9	15.0	11.2	13.3	61	-1	2.4	+0.4	9.2	0	1	28	0	4	17	4	0	3	0	1	2	0
Gulbarga	1730	..	1011.1	938.6	..	25.5	16.6	10.0	12.3	39	..	1.1	..	8.6	0	0	28	0	23	4	1	0	0	0	0	3	0
	0830	458	1016.2	964.2	0	20.6	15.4	11.4	13.7	56	-3	4.0	+2.6	6.3	0	0	22	1	10	10	1	0	0	0	0	9	0
Hijapur	0830	594	1015.8	948.6	-0.1	19.1	15.2	12.3	14.5	65	+4	3.9	+1.4	1.2	0	0	15	1	1	6	2	3	1	1	0	16	0
	1730	..	1010.1	959.8	..	28.8	17.8	9.8	12.3	31	..	3.2	..	2.8	0	0	24	5	5	9	3	1	0	0	1	7	0
Raichur	0830	400	1015.3	970.3	-0.1	22.3	17.4	14.1	15.9	61	-4	3.9	+2.2	4.6	0	0	25	4	7	3	5	0	4	1	1	6	0
	1730	..	1010.6	966.5	..	28.4	18.6	11.3	13.5	36	..	4.2	..	6.1	0	0	31	0	19	0	12	0	0	0	0	18	0
Belgaum	0830	753	1016.4	932.0	+1.0	18.6	15.9	14.0	16.1	75	+11	2.8	+1.0	2.3	0	0	13	0	0	13	0	0	0	0	0	1	2
	1730	..	1009.1	927.8	..	27.8	17.4	9.6	12.3	33	..	2.7	..	5.7	0	0	30	0	4	21	1	2	0	0	0	18	0
Belgaum (Samra)	0530	747	1013.5	929.7	..	17.6	14.4	11.8	14.1	70	..	2.5	..	3.0	0	0	13	0	5	7	1	0	0	0	0	11	0
	0830	..	1015.1	931.8	..	20.0	15.9	13.0	15.1	65	..	3.5	..	6.5	0	1	19	2	2	14	1	1	0	0	0	1	0
	1130	..	1013.1	931.5	..	25.9	17.4	11.4	13.7	41	..	3.5	..	12.8	0	4	26	0	4	18	8	0	0	0	0	5	0
	1730	..	1009.3	928.5	..	27.6	17.1	9.2	11.9	32	..	3.3	..	7.2	0	2	24	0	5	11	7	2	0	1	0	5	0
	0530	650	1013.4	940.4	..	18.7	16.1	14.3	16.4	77	..	1.5	..	3.1	0	0	17	0	0	12	5	0	0	0	0	14	0
Gadag	0830	..	1015.1	942.3	0	20.4	17.2	15.1	17.1	72	+10	2.5	+0.7	5.2	0	0	27	0	0	19	8	0	0	0	0	4	0
	1130	..	1013.3	942.2	..	27.3	19.9	15.6	18.1	50	..	2.7	..	8.5	0	0	30	0	2	25	3	0	0	0	0	1	0
	1730	..	1009.8	939.0	..	29.9	19.0	13.7	15.7	44	..	3.1	..	6.0	0	0	30	0	2	27	1	0	0	0	0	1	0
	2330	..	1014.3	941.4	..	21.1	16.7	13.7	15.8	63	..	1.5	..	4.5	0	0	24	0	2	19	3	0	0	0	0	7	0
Interior Mysore (South) Bellary	0830	449	1015.6	965.0	+0.4	21.6	18.6	16.5	19.0	73	+6	3.2	+0.6	5.2	0	0	22	0	0	0	22	0	0	0	0	9	0
	1730	..	1010.6	961.1	..	28.2	20.9	16.1	18.8	50	..	3.7	..	8.4	0	0	29	0	0	0	29	0	0	0	0	2	0
Chitradurga	0830	733	1014.8	933.3	+0.4	20.7	17.0	14.5	16.7	70	+2	4.1	+1.4	5.6	0	0	27	0	1	24	1	0	0	1	0	4	0
	1730	..	1009.5	929.8	..	26.0	17.5	11.3	13.7	42	..	3.8	..	3.4	0	0	26	0	1	24	1	0	0	0	0	5	0
Shimoga	0830	571	1014.3	949.9	-0.6	19.9	17.2	15.8	17.6	77	+1	5.3	+2.5	2.5	0	0	13	0	0	9	1	1	2	0	0	18	0
	1730	..	1009.0	946.7	..	27.9	19.1	13.3	15.7	43	..	5.2	..	5.3	0	0	24	1	6	13	3	0	1	0	0	7	0
Anumbe	0830	..	..	..	..	19.9	17.8	16.5	18.8	81	..	..	..	9.7	0	1	30	0	12	11	8	0	0	0	0	0	0
	0830	..	..	..	..	19.7	17.4	16.1	18.2	80	+4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Balehonnur	0830	960	1530.9	908.9	..	18.3	16.5	15.4	17.5	83	+8	3.8	+0.6	3.6	0	0	28	1	1	25	0	0	0	1	0	3	0
	1730	..	1511.8	905.7	..	24.0	17.6	13.1	15.5	53	..	3.0	..	3.2	0	0	28	4	0	24	0	0	0	0	0	3	0
Bangalore	0230	921	1509.7	911.1	..	17.1	16.5	16.1	18.3	94	..	4.5	..	6.1	0	0	25	0	7	17	1	0	0	0	0	6	0
	0830	..	1530.7	913.0	+0.2	18.5	16.7	15.4	17.7	83	+5	4.6	+1.1	7.0	0	0	27	0	5	21	1	0	0	0	0	4	0
	1130	..	1540.3	913.0	..	23.3	17.6	13.5	16.0	56	..	4.4	..	13.4	0	6	23	0	9	18	2	0	0	0	0	2	0
	1730	..	1515.8	910.4	..	23.3	17.4	13.3	15.6	56	..	4.3	..	10.3	0	1	28	0	8	21	0	0	0	0	0	2	0
	0530	897	1508.3	913.7	..	16.7	16.1	15.7	17.8	94	..	4.8	..	4.5	0	0	19	0	3	16	0	0	0	0	0	12	0
Bangalore Aerodrome	0830	..	1531.8	915.8	..	18.5	16.9	15.9	18.1	85	..	4.9	..	7.3	0	0	20	2	4	14	0	0	0	0	0	11	0
	1130	..	1538.4	915.4	..	23.0	17.4	13.3	15.8	57	..	4.3	..	11.7	0	1	27	1	8	18	1	0	0	0	0	3	0
	1730	..	1515.6	912.9	..	23.4	17.4	13.3	15.5	56	..	3.3	..	10.3	0	0	29	1	5	23	0	0	0	0	0	2	0
	2330	..	1525.3	915.2	..	17.9	16.5	15.6	17.7	86	..	3.3	..	5.0	0	0	23	1	3	19	0	0	0	0	0	8	0
	0830	767	1014.8	929.3	+0.2	19.6	16.9	15.2	17.3	76	+2	3.3	-0.1														

Sub-Division and station	Hours of observation I.S.T.	Station elevation in	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity%	Departure from normal	Cloud amount (Oktas)		Mean wind speed Kms. per hour	Wind speed (Km. p. h.)			No. of observations																	
			At mean sea level or height in s. p. m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction																	
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable								
Kerala—(Contd.)																																			
Fort Cochin	0830	3	1012.9	1012.6	0	26.5	23.1	21.4	25.5	74	+1	5.6	+3.0	4.4	0	0	26	1	13	11	1	0	0	0	0	0	5	0							
	1730	"	1009.4	1009.1	..	28.2	23.8	22.2	26.7	70	..	5.6	..	5.7	0	1	26	1	3	0	1	0	4	12	6	4	0								
Cochin (Naval Air Station)	0230	3	1011.0	1010.7	..	24.2	22.8	22.1	26.6	88	..	4.8	..	1.5	0	0	11	2	4	4	0	1	0	0	0	20	0								
	0530	"	1011.0	1010.7	..	23.4	22.0	21.3	25.3	85	..	3.7	..	1.9	0	0	13	0	6	6	1	0	0	0	0	18	0								
	0830	"	1013.0	1012.7	..	25.3	22.7	21.3	25.3	79	..	4.3	..	5.8	0	0	24	2	8	11	3	0	0	0	0	7	0								
	1130	"	1012.8	1012.5	..	29.3	23.7	20.7	24.4	60	..	4.3	..	5.5	0	0	21	2	2	9	3	2	1	1	1	10	0								
	1730	"	1009.7	1009.4	..	28.7	23.9	21.5	25.6	66	..	4.5	..	8.0	0	0	29	1	1	0	1	0	9	15	2	2	0								
	2330	"	1012.6	1012.3	..	25.4	23.4	22.5	27.3	84	..	4.8	..	2.7	0	0	15	1	0	11	1	0	0	0	2	16	0								
Alleppey	0830	4	1012.9	1012.5	+0.6	26.0	23.3	21.9	26.3	79	+3	4.1	+0.1	4.5	0	0	28	0	5	10	13	0	0	0	0	3	0								
	1730	"	1009.6	1009.2	..	29.1	24.7	22.7	27.6	69	..	3.7	..	13.7	0	1	30	0	1	0	1	0	0	6	23	0	0								
Punalur (R)	0830	34																																	
	1730	"																																	
Trivandrum	0230	64	1010.4	1003.1	..	24.1	22.6	21.8	26.1	88	..	3.1	..	3.7	0	0	20	1	6	6	1	2	0	1	3	11	0								
	0530	"	1010.6	1003.3	..	23.3	22.0	21.3	25.3	89	..	3.1	..	5.1	0	0	27	3	14	6	1	1	0	1	1	4	0								
	0830	"	1012.7	1005.4	+0.2	25.6	22.8	21.5	25.6	80	0	3.5	-0.1	3.1	0	0	23	2	13	3	3	0	1	1	0	8	0								
	1130	"	1012.1	1004.8	..	29.4	23.7	20.7	24.4	61	..	4.8	..	5.0	0	0	28	1	4	3	4	0	6	4	6	3	0								
	1730	"	1009.8	1002.5	..	27.9	24.0	22.0	26.4	71	..	4.8	..	5.1	0	0	29	1	0	0	2	2	7	12	5	2	0								
	2330	"	1012.4	1005.0	..	24.9	23.3	22.4	27.1	87	..	4.3	..	3.5	0	0	21	2	8	3	4	0	1	3	0	10	0								
Trivandrum Aerodrome	0830	8	1013.0	1012.1	..	26.4	23.0	21.2	25.2	74	..	3.9	..	6.0	0	0	24	1	9	11	2	1	0	0	0	7	0								
Arabian Sea Islands																																			
Amini*	0530	4																																	
	0830	"																																	
	1130	"																																	
	1730	"																																	
	2330	"																																	
Minicoy*	0530	2																																	
	0830	"																																	
	1130	"																																	
	1730	"																																	
	2330	"																																	
Hill Stations excluding Kashmir																																			
Dalbousie	0830	1959	1470.2	802.0	+0.8	9.6	6.8	1.1	6.6	56	+1	0.9	-0.9	2.6	0	0	24	0	19	1	3	0	0	6	1	7	0								
	1730	"	1461.1	801.0	..	9.6	7.5	5.3	8.9	79	..	1.5	..	2.0	0	0	21	1	2	1	9	1	5	1	1	10	0								
Dharmasala	0830	1211	1565.8	887.4	+0.5	10.2	6.2	1.3	6.7	54	-4	1.5	-1.1	0.6	0	1	7	6	1	1	0	0	0	0	0	23	0								
	1730	"	1565.5	886.8	..	14.5	10.1	5.9	9.3	57	..	1.3	..	2.1	0	0	30	0	0	0	0	29	0	1	1	0									
Simla	0830	2202	1520.0	783.7	+0.6	8.4	1.7	-13.1	2.0	28	-6	1.3	-1.5	1.8	0	0	28	5	5	0	4	7	5	1	1	3	0								
	1730	"	1515.5	783.2	..	8.5	4.4	-1.6	5.4	52	..	1.9	..	1.7	0	0	26	1	10	0	6	0	8	0	1	5	0								
Lokpal	0830	..	..	..	..	-9.4	-10.8	-14.5	1.7	63	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Badrinath	0830	..	..	..	..	..	..	..	..																		
Joshimath	0830	..	..	..	..	6.3	1.4	-7.7	3.2	39	..	1.6	..	6.5	0	1	26	0	3	9	11	2	1	0	0	4	1							
	1730	..	..	..	..	8.2	3.7	-2.7	4.9	49	..	1.9	..	4.1	0	0	31	1	0	3	5	7	14	1	0	0	0							
Mussoorie	0830	2042	..	..	..	8.0	3.9	-2.2	5.1	52	+7	1.4	-1.2	3.0	0	0	24	5	1	0	6	7	1	0	4	7	0							
	1730	..	..	..	..	8.3	6.4	4.4	8.4	77	..	2.2	..	2.4	0	0	20	3	1	0	5	7	3	0	1	11	0							
Mukteswar (Kumaun)	0830	2311	3133.8	774.4	+0.4	7.2	2.4	-6.0	4.2	44	+5	0.8	-1.5	9.0	0	1	25	0	6	4	1	1	4	6	4	5	0								
	1730	..	3120.1	772.9	..	7.4	4.4	-0.4	6.4	64	..	1.2	..	6.1	0	3	19	0	2	0	1	0	2	14	3	9	0								
Nainital	0830	1953	1518.1	806.5	-0.1	6.2	3.3	-2.0	5.2	57	-2	0.6	-1.7	2.6	0	0	14	2	2	1	1	0	0	4	4	17	0								
	1730	..	1501.5	804.8	..	6.9	5.1	2.5	7.3	75	..	2.9	..	6.7	0	1	30	0	0	2	1	3	3	22	0	0	0								
Kalimpong	0830	1209	1477.4	877.5	-6.2	16.0	14.1	12.9	14.9	81	+8	2.0	-0.2	2.6	0	0	31	0	0	0	3	0	0	0	28	0	0								
	1730	..	1466.8	876.4	..	15.7	13.8	12.5	14.5	82	..	2.3	..	2.3	0	0	31	0	0	0	30	0	0	0	1	0	0								
Darjeeling	0830	2128	1501.3	788.7	-1.8	7.7	5.7	3.6	7.9	75	+9	3.8	+1.2	0.9	0	0	8	3	0	0	1	1	3	0	0	23	0								
	1730	..	1479.4	786.7	..	7.9	6.5	5.1	8.8	82	..	5.2	..	1.1	0	0	6	0	0	0	0	0	1	4	0	25	1								
Kohima	0830	1406	1551.5	864.9	..	12.8	11.8	11.0	13.1	91	..	2.7	..	3.0	0	0	31	0	0	0	11	0	5	0	15	0	0								
	1730	..	1526.0	862.3	..	13.1	12.4	11.9	13.9	93	..	4.4	..	3.0	0	0	31	1	1	0	0</														

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—DECEMBER 1963 (AGRAHAYANA 10—PAUSA 10, 1885 SAKA)

Sub-Division and station	Hours of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)			Wind speed (Km. p.h.)			No. of observations											
			At mean sea level or height in g.p. m. of nearest standard isobarc level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal	Mean wind speed Kms. per hour	Wind direction			N	NE	E	SE	S	SW	W	NW	Calm	Variable		
															62 or more	20 to 61	1 to 19											19	20	21	22	23	24	25	26	27	28
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		
Hill stations excluding Kashmir—(Contd.)																													
Abu	0830	1195	1525.1	884.2	-0.6	14.6	9.7	3.7	8.5	50	+6	1.7	+0.3	0.3	0	2	0	1	0	0	0	0	0	0	0	1	29	0	
	1730	"	1520.6	883.0	..	18.9	12.4	6.2	9.7	45	..	1.6	..	0.6	0	6	3	0	0	0	0	2	0	0	1	25	0	0	
Aijal . . (R)	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pachmarhi . .	0830	1075	1542.1	898.5	+0.2	14.8	10.3	5.7	3	56	-6	2.0	+0.3	1.1	0	12	0	2	4	0	3	1	1	0	2	19	0	0	
	1730	"	1529.5	896.4	..	19.5	12.2	5.0	8.9	41	..	2.8	..	2.0	0	22	2	9	1	0	1	1	1	1	1	7	9	0	0
Mahableshwar . .	0830	1382	1533.5	865.5	+0.2	16.4	11.9	7.6	10.7	58	+3	1.7	+0.3	10.6	0	31	1	17	4	7	1	0	0	1	2	2	0	0	0
	1730	"	1516.3	863.5	..	21.8	14.8	9.4	11.8	46	..	1.8	..	9.6	0	31	0	22	4	0	0	1	2	2	0	0	0	0	0
Mercara	0830	1152	1525.0	888.2	+0.8	17.2	15.2	13.8	15.8	81	-2	2.1	-2.1	17.1	0	17	1	7	22	0	0	0	0	1	0	0	0	0	0
	1730	"	1510.0	886.0	..	21.8	16.9	13.5	15.5	61	..	3.0	..	11.8	0	7	24	1	10	15	0	0	0	3	2	0	0	0	0
Ootaramund	0830	2249	1527.5	781.3	+0.9	13.1	9.9	6.8	9.9	69	+5	3.1	+0.1	2.0	0	9	0	5	4	0	0	0	0	0	0	0	22	0	0
	1730	"	1503.5	779.4	..	15.0	11.9	9.2	11.6	72	..	3.5	..	1.6	0	11	0	2	9	0	0	0	0	0	0	0	20	0	0
Coonoor (R) . .	0830	1747	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kedakanal . . .	0830	2343	3168.8	773.0	+1.3	13.8	10.3	6.2	9.5	69	+5	4.7	+1.2	8.8	0	24	2	8	3	8	3	1	0	1	5	0	0	0	0
	1130	"	3173.9	772.9	..	15.9	11.9	7.9	10.7	65	..	4.6	..	9.5	0	30	4	8	4	11	2	0	0	1	1	1	0	0	0
	1730	"	3147.0	771.2	..	13.3	10.7	8.4	11.0	77	..	5.3	..	6.6	0	22	6	5	2	5	1	0	0	4	8	0	0	0	0
Nepal																													
Kathmandu . . .	0830	1324	1533.1	872.0	..	6.9	6.1	5.1	8.8	88	..	3.9	..	0.2	0	2	0	0	2	0	0	0	0	0	0	29	0	0	0
	1130	"	1527.0	870.8	..	16.3	11.1	6.0	9.4	51	..	1.8	..	0.4	0	4	1	1	0	0	0	0	0	0	2	27	0	0	0
	1730	"	1508.3	869.0	..	13.2	9.6	5.9	9.3	61	..	2.2	..	0.6	0	6	1	4	0	0	0	0	1	0	25	0	0	0	0
Sikkim																													
Lachen	0830	..	..	..	..	5.0	1.4	-4.2	4.3	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydrometeorological (Observatories)																													
Damodar Catchment																													
Tilaiya	0830	..	..	..	..	18.0	13.9	9.5	12.6	59	..	1.0	..	5.1	0	25	2	0	2	0	0	1	16	4	6	0	0	0	0
	1730	..	..	..	..	18.8	13.7	8.6	11.1	52	..	0.7	..	4.1	0	29	6	0	4	0	0	1	17	1	2	0	0	0	0
Hazaribagh . . .	0830	615	1017.5	947.1	..	15.8	12.1	8.9	11.4	64	..	1.2	..	4.3	0	22	2	0	5	0	0	1	3	11	9	0	0	0	0
	1730	"	1014.6	944.4	..	15.8	12.2	9.1	11.5	64	..	1.3	..	1.3	0	13	2	0	0	1	0	0	1	9	18	0	0	0	0
Konar	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bokaro	0830	242	1018.5	990.1	..	15.0	11.7	9.0	11.5	67	..	0.9	..	2.5	0	22	2	1	0	1	0	3	11	4	9	0	0	0	0
	1730	"	1013.5	985.9	..	22.0	15.0	8.6	11.2	43	..	1.7	..	3.2	0	28	13	5	0	1	2	0	1	6	3	0	0	0	0
Maithon	0830	..	..	..	..	19.7	15.1	11.3	13.5	59	..	1.8	..	3.2	0	1	20	5	0	1	1	2	2	0	10	10	0	0	0
	1730	..	..	..	..	23.0	16.7	11.9	13.8	50	..	2.2	..	1.2	0	15	4	0	0	0	0	1	9	4	1	16	0	0	0
Ramgarh	0830	..	..	..	..	14.1	12.1	9.9	12.2	75	..	0.7	..	1.5	0	15	0	0	0	0	0	1	9	4	1	16	0	0	0
	1730	..	..	..	..	20.1	14.7	10.2	12.4	53	..	1.6	..	0.1	0	1	0	1	0	0	0	0	0	0	0	30	0	0	0
Panchet Hills . .	0830	..	..	..	..	18.2	14.7	11.9	13.9	69	..	2.1	..	2.1	0	16	0	0	0	0	0	7	0	9	15	0	0	0	0
	1730	..	..	..	..	21.5	16.4	12.5	14.5	57	..	2.7	..	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0
Durgapur	0830	..	..	..	..	18.7	15.7	13.0	15.0	70	..	1.2	..	8.7	0	31	19	5	3	0	1	0	0	3	0	0	0	0	0
	1730	..	..	..	..	23.1	17.5	13.4	15.4	55	..	0.9	..	7.3	0	31	15	3	2	0	2	0	1	8	0	0	0	0	0
Mahandi Catchment																													
Ginabhar	0830	..	..	..	..	15.3	12.2	9.7	11.9	70	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hirakud	0830	159	1018.1	999.6	..	19.4	15.7	12.9	14.9	66	..	1.9	..	3.0	0	28	10	2	4	2	0	1	0	4	3	5	0	0	0
	1130	"	1016.9	998.6	..	23.8	17.3	12.5	14.5	49	..	2.1	..	3.0	0	31	6	3	2	1	2	2	0	11	0	4	0	0	0
	1730	"	1013.9	995.6	..	23.5	16.9	11.8	13.8	49	..	2.2	..	1.5	0	15	5	1	0	0	2	1	1	4	16	1	0	0	0
Bhimkund	0830	..	..	..	..	16.6	14.0	11.9	13.9	73	..	1.8	..	1.7	0	15	1	0	1	0	0	1	0	12	16	0	0	0	0
	1730	..	..	..	..	21.2	16.1	12.2	14.2	56	..	2.2	..	0.3	0	3	0	0	1	0	0	0	0	2	28	0	0	0	0
Senepur	0830	..	..	..	..	17.9	16.0	14.7	16.7	82	..	..	..	2.1	0	18	1	0	5	2	3	4	3	0	13	0	0	0	0
Khijrawan	0830	..	..	..	..																				

Sub-division and station ^(a)	Hour of observation I.S.T.	Station elevation in metres.	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Mean wind speed km. per hour	Wind speed (K.m.p.h.)			No. of observations										
			At mean sea level or height in g. p. m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction										
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Hydrometeorological Observatories (Contd.) Kandak Catchment Khudi Bazar	0830	..	..	..	..	13.3	11.0	9.4	11.8	77	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	17.9	13.7	11.9	13.1	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Limure	0830	..	..	..	..	6.2	2.6	-2.5	5.0	54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	10.8	7.1	3.3	7.7	60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pokhara	0830	..	..	..	..	12.9	10.8	8.9	11.4	77	..	2.5	..	1.5	0	0	15	10	1	0	0	1	1	0	2	16	0
	1130	..	..	..	..	18.0	13.1	9.1	11.6	56	..	2.0	..	4.9	0	0	30	0	0	2	10	16	2	0	0	1	0
Gorkha	1730	..	..	..	..	15.7	12.9	10.7	12.9	73	..	3.8	..	0.9	0	0	9	1	5	2	1	0	0	0	0	22	0
	0830	..	..	..	..	13.9	11.2	8.7	11.3	71	..	1.6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nuwakot	1130	..	..	..	..	17.1	13.2	10.1	12.3	64	..	1.5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	14.5	11.1	8.1	10.8	66	..	2.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhaghara Catchment (Trans Himalayan Region)	0830	..	..	..	..	14.3	12.1	10.3	12.5	77	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	15.6	12.1	9.1	11.5	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dailekh	0830	..	..	..	..	10.8	8.1	5.3	8.9	69	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	11.9	9.8	7.8	10.6	76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhaghara Catchment	0830	..	..	..	..	8.5	5.4	1.4	7.0	65	..	0.7	..	5.3	0	0	28	0	0	9	14	2	1	2	0	3	0
	1130	..	..	..	..	11.0	7.0	2.7	7.5	58	..	1.1	..	3.4	0	0	25	5	4	6	2	1	0	0	7	6	0
Sallyana	1730	..	..	..	..	8.9	6.2	3.1	7.7	68	..	1.6	..	3.7	0	0	31	0	9	0	1	2	4	8	16	0	0
	0830	..	..	..	..	13.2	9.7	6.3	9.5	63	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Butwal	1730	..	..	..	..	12.1	10.9	8.1	10.8	76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	0830	..	..	..	..	17.0	12.7	10.9	13.0	67	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Baghmatti Catchment Katmandu*	1730	..	..	..	..	19.9	16.3	13.7	15.7	67	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	0830	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kosi Catchment Chautara	1130	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chepua	0830	..	..	..	..	11.1	9.1	7.4	10.3	78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	14.2	10.9	8.3	10.9	68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Walunghung Gola	0830	..	..	..	..	6.7	5.3	4.2	8.2	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	9.0	7.4	6.3	9.5	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplethok	0830	..	..	..	..	4.1	2.9	1.6	6.9	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	1.9	1.9	-0.2	6.0	85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bhojpur	0830	..	..	..	..	12.6	9.4	6.2	9.5	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	13.9	10.0	6.2	9.5	59	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taplejung	0830	..	..	..	..	11.1	8.9	7.0	10.6	76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	10.6	9.1	7.8	10.6	83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ckhalunga	0830	..	..	..	..	9.5	7.5	5.4	9.1	77	..	3.3	..	..	..	..	..	0	0	0	1	1	0	1	0	28	0
	1130	..	..	..	..	13.5	9.8	6.3	9.7	64	..	3.7	..	..	..	..	..	0	0	0	0	0	3	7	8	13	0
Chainpur	1730	..	..	..	..	10.9	8.0	5.1	8.9	68	..	4.5	..	..	..	..	..	0	0	0	1	3	18	0	0	9	0
	0830	..	..	..	..	10.5	7.8	4.9	8.8	71	..	1.5	..	1.0	0	0	10	0	1	0	5	2	1	1	0	21	0
Anbung†	1130	..	..	..	..	13.6	9.2	5.0	8.8	57	..	2.4	..	3.1	0	0	24	1	1	1	0	3	11	6	1	7	0
	1730	..	..	..	..	9.8	7.8	5.9	9.3	78	..	4.4	..	2.9	0	0	20	3	2	1	0	0	1	10	3	11	0
Barabakshetra	0830	146	1018.7	1001.5	..	12.9	10.6	8.5	11.1	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	13.8	11.3	9.1	11.5	73	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tista Catchment Gangtek	0830	..	..	..	..	21.0	16.8	13.6	15.7	64	..	1.7	..	2.9	0	0	25	0	0	0	2	2	14	5	2	6	0
	1130	..	..	..	..	17.2	15.5	14.3	16.2	83	..	2.0	..	3.3	0	0	30	1	4	9	13	0	3	0	0	1	0
Gezing	0830	1812	1533.2	822.2	..	8.5	6.7	4.7	8.7	79	..	3.3	..	1.8	0	0	18	1	13	0	0	2	0	1	1	13	0	
	1730	..	..	..	..	13.0	9.6	6.5	9.7	67	..	3.9	..	3.0	0	0	25	0	6	0	0	3	12	4	0	6	0
Tista Catchment	0830	..	..	..	..	9.9	8.0	6.1	9.4	79	..	5.3	..	1.4	0	0	12	0	1	0	0	3	7	1	0	19	0
	1730	..	..	..	..	11.8	9.5	7.5	10.4	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	1730	..	..	..	..	11.4	9.2	7.3	10.2	76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

*Data included under 'Nepal'.

† Data not available.

(a) Mean of 30 days.

TABLE III—SUMMARY OF OBSERVATIONS AT FIXED HOURS—JANUARY–DECEMBER 1963 (1884–1885 SAKA)

Sub-Division and Station	Hour of observation I.S.T.	Station elevation in metres	Mean pressure in millibars			Mean temperature in °C			Vapour pressure in mbs.	Relative humidity %	Departure from normal	Cloud amount (Oktas)		Mean wind speed in Kms. per hour	Wind speed (Km. p.h.)			No. of observations									
			At mean sea level or height in g.p.m. of nearest standard isobaric level	At station level	Departure from normal	Dry bulb	Wet bulb	Dew point				Mean amount	Departure from normal		62 or more	20 to 61	1 to 19	Wind direction									
																		N	NE	E	SE	S	SW	W	NW	Calm	Variable
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
ARABIAN SEA ISLANDS. JANUARY																											
Amini (R) 0330 4 21.2 22.9 22.3 26.9 89 .. 3.3 .. 4.3 0 0 20 4 9 1 1 3 0 0 2 11 0 0																											
Minnicoy (R) 1730 1009.9 1009.7 .. 25.3 24.1 23.1 23.3 83 +0 4.3 +1.4 6.5 0 0 23 4 8 5 4 0 0 0 2 8 0 0																											
0330 .. 1011.9 1011.7 .. 29.1 24.7 22.7 27.6 70 .. 4.2 .. 10.0 0 0 31 9 14 1 4 1 0 0 2 0 0 0																											
1130 .. 1011.9 1011.7 .. 28.1 24.3 22.5 27.3 72 .. 4.4 .. 7.3 0 1 26 9 11 3 3 1 0 0 0 4 0 0																											
1730 .. 1009.2 1009.0 .. 25.1 23.2 22.5 27.3 84 .. 3.3 .. 7.1 0 0 26 7 11 2 5 0 0 0 1 5 0 0																											
2330 .. 1011.4 1011.2																											
FEBRUARY																											
Amini (R) 0330 4																											
Minnicoy (R) 1730																											
0330 .. 1010.6 1010.4 .. 23.2 22.2 21.7 25.9 91 .. 3.1 .. 2.0 0 0 8 1 7 0 0 0 0 0 20 0 0																											
0730 .. 1012.5 1012.4 0.4 25.8 23.8 22.9 27.9 84 +10 3.9 +1.1 5.3 0 1 20 7 10 1 1 2 0 0 0 7 0 0																											
1130 .. 1012.9 1012.7 .. 28.5 24.5 22.6 27.4 71 .. 4.1 .. 8.1 0 1 24 9 10 4 1 1 0 0 0 3 0 0																											
1730 .. 1009.9 1009.7 .. 28.3 24.6 22.9 27.8 73 .. 3.9 .. 8.3 0 0 25 10 11 3 1 0 0 0 0 3 0 0																											
2330 .. 1012.0 1011.8 .. 24.9 23.1 22.1 26.7 85 .. 2.3 .. 5.5 0 0 21 5 10 3 2 0 0 0 1 7 0 0																											
MARCH																											
Amini (R) 0330 4																											
Minnicoy (R) 1730																											
0330 .. 1009.7 1009.5 .. 25.3 23.9 23.2 28.4 88 .. 2.7 .. 3.0 0 0 19 6 2 1 0 1 1 0 8 12 0 0																											
0330 .. 1011.7 1011.5 0.3 28.0 25.2 23.9 29.7 79 +7 3.9 +1.1 3.6 0 0 21 8 3 1 0 1 0 1 7 10 0 0																											
1130 .. 1012.1 1011.9 .. 30.4 26.1 24.3 30.4 70 .. 4.0 .. 7.7 0 0 29 13 3 1 2 1 0 1 8 2 0 0																											
1730 .. 1008.9 1008.7 .. 29.7 25.9 24.2 30.2 72 .. 4.5 .. 6.3 0 0 27 9 3 3 0 1 0 1 10 4 0 0																											
2330 .. 1011.5 1011.3 .. 26.2 24.2 23.3 28.6 81 .. 2.2 .. 4.2 0 0 21 11 4 0 0 1 0 0 5 10 0 0																											
APRIL																											
Amini 0330 4 1010.7 1010.3 .. 30.0 25.7 23.7 29.6 69 -2 3.3 0.1 6.9 0 0 28 9 4 0 0 0 1 0 14 2 0 0																											
1730 .. 1007.7 1007.3 .. 31.9 26.3 23.9 29.7 63 .. 3.7 .. 8.3 0 1 28 6 1 0 0 0 0 1 7 11 0 0																											
Minnicoy 0330 2 1033.5 1003.3 .. 25.7 24.5 23.9 29.7 90 .. 3.2 .. 2.8 0 0 19 7 4 0 0 0 0 1 7 8 0 0																											
0830 .. 1019.5 1010.3 0.1 29.1 26.0 24.7 31.0 77 +5 4.6 +1.2 3.7 0 0 22 5 6 0 2 1 0 2 6 8 0 0																											
1130 .. 1010.9 1010.7 .. 30.4 26.4 24.7 31.1 72 .. 4.7 .. 7.0 0 1 28 8 4 7 2 0 0 1 5 5 0 0																											
1730 .. 1007.8 1007.6 .. 30.0 26.2 24.5 30.9 73 .. 5.3 .. 4.0 0 0 25 10 6 2 0 1 0 1 5 6 0 0																											
2330 .. 1010.3 1010.1 .. 26.6 25.0 24.3 30.4 87 .. 2.3 .. 3.4 0 0 24 10 3 1 1 1 2 1 5 6 0 0																											
MAY																											
Amini *0530 4																											
0830 .. 1003.9 1003.5 .. 29.8 26.4 25.0 31.7 76 +3 5.3 +0.7 10.9 0 6 25 7 3 1 0 0 4 3 13 0 0																											
*1130																											
1730 .. 1006.4 1006.0 .. 30.9 26.7 25.0 31.5 71 .. 5.4 .. 11.4 0 6 23 5 3 0 0 2 3 6 10 2 0 0																											
*2330																											
Minnicoy 0330 2 1007.1 1006.9 .. 27.4 25.4 24.5 30.7 85 .. 4.5 .. 7.5 0 3 19 3 1 0 0 0 3 9 6 9 0 0																											
0330 .. 1009.0 1008.8 -1.0 29.2 26.3 25.1 31.8 79 +3 6.1 +1.8 6.7 0 1 22 4 0 1 0 0 3 8 7 8 0 0																											
1130 .. 1009.4 1009.2 .. 30.2 26.7 25.2 32.1 77 .. 6.3 .. 8.7 0 2 27 4 1 0 2 0 4 5 12 2 1 0 0																											
1730 .. 1006.8 1006.6 .. 29.6 26.2 24.7 31.3 75 .. 6.6 .. 9.5 0 4 25 5 2 0 1 0 4 6 11 2 0 0																											
2330 .. 1008.9 1008.7 .. 27.9 25.7 24.8 31.2 84 .. 5.1 .. 10.0 0 5 20 2 0 1 2 0 4 7 9 6 0 0																											
JUNE																											
Amini 0530 4 1008.4 1008.0 .. 27.6 25.4 24.5 30.5 83 .. 6.5 .. 20.0 0 15 13 0 1 0 0 0 6 18 3 2 0 0																											
0830 .. 1009.8 1009.4 .. 28.5 25.9 24.9 31.3 81 -1 6.8 +0.5 16.5 0 11 18 2 0 0 0 0 6 18 3 1 0 0																											
1130 .. 1010.3 1009.8 .. 29.6 26.4 25.0 31.9 76 .. 6.4 .. 16.3 .. 11 19 0 0 0 0 0 5 21 2 2 0 0																											
1730 .. 1008.2 1007.8 .. 29.1 26.1 24.9 31.3 78 .. 6.9 .. 15.0 0 10 18 0 0 0 0 0 4 23 3 0 0 0																											
2330 .. 1010.2 1009.7 .. 28.1 25.7 24.7 31.1 81 .. 5.2 .. 15.1 0 5 25 0 0 0 0 0 1 4 14 8 1 0 0																											
Minnicoy 0530 2 1009.3 1009.1 .. 26.9 24.9 23.9 29.8 84 .. 4.7 .. 14.9 0 10 19 2 0 0 0 0 3 14 10 1 0 0																											
0830 .. 1010.8 1010.6 +1.2 28.1 25.6 24.5 30.8 81 0 6.0 +0.4 13.1 0 3 26 2 0 0 0 0 1 16 8 1 0 0																											
1130 .. 1011.1 1010.9 .. 29.6 26.3 24.9 31.6 76 .. 6.1 .. 15.3 0 10 19 4 0 0 0 0 1 16 10 0 0 0																											
1730 .. 1009.1 1008.9 .. 29.1 26.0 24.6 31.0 77 .. 6.5 .. 16.1 0 11 19 2 0 0 0 0 1 3 17 7 0 0 0																											
2330 .. 1011.2 1011.0 .. 27.6 25.4 24.4 30.5 83 .. 5.5 .. 15.9 0 10 20 2 0 0 0 0 8 18 4 1 0 0																											
JULY																											
Amini 0530 4 1006.8 1006.4 .. 27.5 25.7 24.9 31.5 86 .. 5.9 .. 20.1 0 17 13 0 0 0 0 0 9 19 3 0 0 0																											
0330 .. 1008.4 1008.0 .. 27.9 25.9 25.0 31.9 85 +2 7.0 +0.8 15.9 0 7 24 0 0 0 0 0 11 17 3 0 0 0																											
Minnicoy 1130 .. 1008.8 1008.4 .. 29.0 26.3 25.2 31.9 80 .. 6.7 .. 15.5 0 4 27 0 0 0 0 0 9 20 2 0 0 0																											
1730 .. 1006.7 1006.3 .. 28.6 26.3 25.3 32.2 82 .. 7.0 .. 16.0 0 7 24 0 0 0 0 0 8 20 3 0 0 0																											
2330 .. 1009.1 1008.7 .. 27.2 25.5 24.7 31.1 86 .. 5.8 .. 16.4 0 .. 23 0 0 0 0 0 8 20 3 0 0 0																											

*Data rejected.

(R) Register not received.

Table with columns for Sub-Division and station, Hour of observation I.S.T., Station elevation in metres, Mean pressure in millibars (At sea level, At station level, Departure from normal), Mean temperature in °C (Dry bulb, Wet bulb, Dew point), Vapour pressure in mbs., Relative humid ty%, Departure from normal, Cloud amount (Oktas) (Mean amount, Departure from normal), Mean wind speed in Kms. per hour (62 or more, 20 to 61, 1 to 19), and No. of observations (Wind direction: N, NE, E, SE, S, SW, W, NW, Calm, Variable).

**EXTREMES OF MAXIMUM AND MINIMUM TEMPERATURES (°C)
AND
HEAVIEST RAINFALL (MILLIMETRES) IN 24 HOURS
BASED ON DATA UP TO 1963 (1884-1885 Saka)**

In tables III (A):—

X=Highest Maximum Temperature.

N=Lowest Minimum Temperature.

R=Heaviest Rainfall in 24 hours ending at 0830 hrs I.S.T.

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Bay Islands																		
Maya Bandar	33.9 1953	16.8 1957	63.2 1961	31.7 1963	16.7 1961	42.8 1962	34.0 1962	18.9 1955	9.4 1953	36.1 1955	18.9 1953	67.8 1953	35.0 1952	17.2 1952	102.0 1961	36.1 1952	21.1 1963	213.4 1955
Long Island	31.7 1958	18.3 1963	62.5 1962	33.3 1959	15.6 1953	136.0 1960	35.6 1959	19.4 1962	50.0 1959	36.1 1953	20.6 1963	100.3 1953	36.1 1963	21.1 1955	135.2 1955	33.3 1961	20.4 1963	209.8 1955
Port Blair	32.7 1958	16.7 1940	208.3 1922	33.3 1958	17.2 1949	131.1 1902	35.1 1958	17.8 1949	67.1 1981	36.1 1889	20.6 1939	206.8 1922	36.1 1889	17.1 1961	261.9 1891	35.6 1933	18.9 1961	258.3 1968
Car Nicobar	31.5 1958	16.1 1956	104.1 1954	35.0 1954	16.1 1956	82.5 1956	33.2 1958	16.8 1957	53.3 1953	34.1 1958	19.4 1960	99.6 1956	34.0 1963	21.1 1952	129.0 1955	32.2 1962	21.7 1956	146.6 1963
Nan Cowry	33.9 1954	21.7 1956	146.0 1963	33.9 1961	20.0 1956	91.2 1956	35.0 1954	21.1 1956	51.4 1961	36.7 1952	20.6 1952	82.7 1961	36.1 1952	18.9 1952	154.0 1960	32.3 1962	21.1 1956	257.6 1963
Kondul	30.0 1953	20.6 1956	168.7 1953	30.6 1961	19.4 1953	126.4 1963	31.7 1958	20.2 1960	84.4 1962	33.2 1960	20.7 1960	109.0 1963	35.0 1957	21.7 1956	142.6 1963	31.6 1957	21.7 1955	201.2 1954
Assam (Including Manipur, Tripura) Pasighat	26.6 1961	7.1 1959	41.2 1959	31.0 1960	7.5 1959	137.6 1961	33.2 1958	10.6 1962	99.2 1961	35.4 1959	15.3 1962	74.8 1962	37.4 1961	13.9 1961	125.2 1958	37.9 1963	20.3 1961	170.6 1962
Dibrugarh (Mohanbari) . . .	27.0 1961	3.7 1962	24.6 1956	30.6 1952	4.3 1960	55.9 1954	33.4 1960	8.3 1957	55.1 1955	34.8 1958	13.9 1954	102.6 1961	35.6 1961	15.0 1960	102.1 1959	37.0 1961	16.8 1963	112.8 1951
Digboi	26.6 1959	5.6 1956	52.3 1956	29.4 1956	7.4 1959	34.6 1963	32.8 1958	10.0 1957	40.1 1956	35.6 1959	13.8 1957	66.0 1957	36.1 1956	17.4 1957	57.2 1959	37.2 1956	20.6 1957	95.8 1957
North Lakhimpur	26.7 1955	2.3 1956	52.0 1962	30.2 1960	5.4 1958	22.4 1960	32.9 1958	8.1 1957	74.2 1955	35.1 1962	14.3 1959	99.6 1954	36.7 1961	16.2 1961	178.3 1958	36.7 1961	20.9 1957	119.0 1962
Sibsagar	28.9 1942	3.3 1917	43.7 1945	30.6 1942	2.8 1905	42.9 1892	35.6 1945	7.2 1917	113.0 1892	37.2 1960	12.8 1912	148.6 1913	42.8 1945	16.7 1893	133.2 1931	37.8 1881	19.4 1907	189.2 1903
Gohpur	26.6 1961	3.8 1963	14.0 1958	29.9 1963	4.9 1963	21.5 1956	35.2 1962	7.7 1959	31.2 1959	36.6 1962	11.6 1953	63.5 1962	34.9 1962	16.1 1962	95.7 1959	36.6 1961	19.4 1962	59.2 1962
Majbat	26.9 1963	6.6 1963	30.2 1963	31.3 1963	7.7 1963	22.1 1962	33.5 1963	12.2 1963	53.0 1961	35.1 1963	16.6 1963	95.3 1962	33.5 1963	18.9 1963	103.6 1963	35.4 1963	22.0 1963	235.0 1962
Jorhat (Aerodrome)	26.7 1955	5.2 1962	31.0 1954	31.1 1954	6.0 1961	18.0 1959	31.1 1960	8.9 1957	43.0 1954	37.5 1960	15.0 1960	58.2 1962	37.8 1960	16.1 1955	119.9 1957	37.3 1961	26.6 1955	146.6 1959
Tangla	31.7 1963	5.3 1962	31.0 1957	32.3 1963	5.9 1962	29.3 1957	33.4 1958	10.6 1961	43.3 1957	37.9 1960	13.9 1960	109.9 1959	38.9 1960	15.7 1962	36.2 1959	39.5 1961	21.0 1963	125.4 1958
Tezpur	27.3 1961	5.6 1945	23.5 1907	31.7 1952	6.1 1905	36.6 1940	36.7 1923	10.0 1927	62.0 1912	33.3 1960	13.3 1905	100.1 1946	38.9 1960	17.2 1963	140.1 1901	36.7 1953	19.4 1967	176.3 1965
Golaghat	28.3 1961	6.0 1962	20.8 1962	30.6 1963	1.1 1958	22.0 1959	35.6 1954	6.6 1958	37.6 1956	38.9 1960	15.6 1958	53.3 1958	38.9 1960	11.1 1958	134.6 1957	36.7 1961	19.9 1957	79.8 1961
Rangia	28.2 1960	5.5 1962	25.3 1962	32.3 1963	8.8 1962	35.6 1958	35.9 1962	10.5 1963	38.0 1963	38.4 1960	12.2 1960	40.6 1958	39.5 1960	16.9 1963	99.9 1963	37.3 1963	20.6 1960	175.6 1959
Chaparmukh	28.4 1958	7.3 1960	17.2 1962	33.3 1960	7.9 1963	15.1 1959	37.2 1958	12.0 1959	49.4 1961	41.1 1960	15.5 1961	54.2 1963	41.2 1960	18.6 1963	139.2 1961	37.8 1963	21.1 1963	121.3 1965
Goalpara	29.0 1959	6.1 1962	72.4 1957	32.4 1960	5.2 1961	31.7 1958	37.6 1958	10.2 1957	40.0 1963	39.9 1958	14.6 1957	108.8 1961	41.4 1960	16.7 1955	141.7 1954	37.0 1961	16.1 1955	162.4 1962
Gauhati	28.9 1955	5.0 1925	41.1 1945	35.0 1951	5.0 1920	53.3 1914	38.3 1909	6.1 1906	56.1 1915	40.6 1960	12.8 1907	75.7 1955	41.1 1960	16.1 1955	185.4 1941	36.7 1963	18.9 1955	194.3 1956
Gauhati (Bhorjor)	28.4 1958	5.1 1960	39.1 1957	32.2 1956	6.1 1951	16.5 1957	37.2 1954	10.2 1962	49.8 1955	39.5 1960	14.4 1952	100.3 1955	40.3 1960	17.2 1955	96.8 1958	36.7 1952	21.1 1955	173.7 1953
Dhubri (Rupsi)	28.1 1961	5.0 1960	55.4 1957	31.7 1963	4.6 1961	24.9 1958	33.2 1960	10.7 1962	46.4 1961	41.0 1960	14.8 1960	138.0 1959	41.2 1960	17.1 1958	85.0 1962	35.2 1960	20.4 1960	157.2 1959
Dhubri	29.4 1953	6.1 1905	54.1 1945	32.2 1961	2.8 1905	59.9 1904	38.3 1909	7.4 1961	107.9 1935	41.1 1939	12.2 1905	197.6 1948	41.4 1960	15.9 1957	226.3 1944	36.9 1965	13.9 1953	368.3 1903
Lumding	29.0 1961	3.4 1960	27.7 1957	33.9 1952	4.4 1956	34.5 1957	38.3 1958	8.4 1957	47.0 1959	41.9 1960	10.6 1951	31.8 1956	41.9 1960	17.2 1955	129.0 1961	39.3 1962	20.0 1953	135.6 1957
Tura	27.9 1961	5.6 1961	24.5 1959	31.7 1956	5.6 1961	32.3 1954	37.2 1958	11.7 1963	83.2 1959	38.5 1960	13.0 1963	168.1 1963	39.4 1960	13.8 1962	193.3 1952	34.2 1961	17.7 1963	207.8 1963
Haflong	24.6 1961	7.1 1959	48.0 1957	28.5 1960	5.4 1959	65.8 1954	33.7 1958	13.6 1959	192.3 1961	32.8 1963	12.6 1958	164.1 1955	35.6 1956	14.9 1958	248.2 1958	32.7 1963	17.6 1960	242.8 1960
Silchar (Kumbhirgram) . . .	29.6 1959	7.2 1962	20.8 1958	31.6 1963	8.5 1961	48.0 1959	30.0 1966	12.2 1960	173.8 1961	38.4 1960	15.1 1962	127.8 1962	39.8 1960	17.9 1958	178.4 1961	37.2 1963	20.8 1961	277.7 1959
Silchar	30.6 1915	5.6 1899	100.1 1911	35.0 1912	5.0 1905	90.4 1927	37.8 1901	8.3 1927	243.4 1922	39.4 1937	13.9 1935	165.1 1954	38.9 1937	15.6 1886	290.3 1893	37.8 1900	19.4 1926	227.3 1913
Imphal (Tulihal)	23.9 1963	6.7 1963	7.0 1962	27.4 1963	4.4 1963	10.0 1962	31.7 1962	6.0 1962	21.8 1963	33.9 1963	11.1 1963	29.7 1962	34.1 1962	13.9 1963	54.2 1963	34.4 1963	19.1 1962	105.2 1962
Kailashahar	29.9 1961	3.6 1962	14.0 1962	34.1 1960	5.9 1961	44.1 1962	37.7 1962	10.8 1960	76.4 1961	42.2 1960	15.2 1961	53.2 1962	42.0 1960	18.5 1959	72.7 1963	36.6 1961	21.3 1961	214.3 1960
Agartala	29.9 1961	3.9 1955	50.1 1957	34.4 1960	5.9 1961	45.0 1958	38.9 1962	10.0 1957	98.6 1960	41.5 1960	14.5 1962	141.2 1955	42.2 1960	16.1 1955	123.4 1956	36.3 1958	19.5 1961	228.6 1961
Sub-Himalayan West Bengal																		
Baghdogra	28.9 1954	3.4 1960	37.1 1954	31.7 1955	4.0 1961	12.0 1960	36.7 1954	8.7 1959	13.7 1956	41.7 1952	12.2 1962	86.1 1952	39.4 1957	13.9 1955	149.8 1962	36.7 1952	20.4 1960	208.8 1962
Jalpaiguri	28.9 1931	5.0 1937	37.6 1889	31.1 1931	2.2 1905	71.9 1914	36.1 1945	7.8 1906	68.6 1926	40.0 1932	10.6 1905	152.4 1945	39.4 1899	16.1 1910	161.0 1938	37.2 1927	17.0 1957	234.9 1903
Cooch Behar	28.8 1961	3.9 1955	34.0 1957	31.3 1960	5.9 1958	16.3 1954	37.3 1958	10.0 1958	38.1 1963	39.4 1954	13.9 1955	74.2 1958	39.9 1960	16.2 1960	137.8 1961	36.4 1961	19.4 1955	286.2 1958
Balurghat	29.8 1961	4.3 1963	3.9 1961	33.2 1963	6.3 1961	31.1 1961	37.9 1961	10.4 1963	25.4 1963	42.2 1961	13.3 1963	47.4 1963	42.8 1961	15.8 1963	49.6 1962	37.6 1961	20.4 1963	193.6 1961
Malda	29.4 1958	4.4 1937	69.1 1957	33.9 1952	3.0 1905	45.0 1942	41.7 1941	7.2 1898	53.9 1926	43.6 1960	11.1 1953	63.0 1892	45.0 1958	18.3 1963	195.1 1938	44.4 1958	20.0 1955	167.9 1945
Gangetic West Bengal																		
Berhampore	31.2 1958	3.9 1933	69.6 1957	36.7 1926	5.0 1950	60.7 1937	42.2 1941	8.9 1898	62.2 1887	45.0 1934	15.6 1936	54.6 1893	46.1 1916	16.7 1882	155.7 1915	44.4 1953	19.4 1884	202.4 1898
Suri	31.1 1955	6.6 1963	132.3 1957	35.0 1960	8.3 1956	41.8 1961	41.1 1955	12.7 1957	24.0 1961	44.7 1961	17.8 1955	44.4 1963	46.1 1958	17.9 1963	80.4 1959	45.4 1958	20.0 1953	73.7 1956

X	July		August			September			October			November			December			Based on data from		Sub-division Station
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	N	N	R	Tem-perature		Rain-fall
32.8 1950	21.1 1954	160.4 1959	32.2 1953	20.6 1953	118.4 1963	31.7 1963	20.5 1958	115.2 1963	32.0 1963	20.6 1955	93.6 1961	33.0 1951	20.0 1962	109.0 1959	31.2 1963	19.3 1956	85.0 1959	1952	1952	Bay Islands Maya Bandar
33.3 1953	20.4 1960	146.4 1962	36.7 1952	21.2 1962	117.3 1956	32.7 1957	21.4 1963	252.4 1961	32.2 1963	21.4 1956	122.2 1952	32.2 1953	30.4 1962	119.1 1953	32.2 1963	17.2 1953	108.2 1962	1952	1952	Long Island
32.8 1941	18.3 1941	164.9 1959	31.7 1932	19.7 1932	173.2 1931	31.7 1886	19.5 1961	178.1 1964	35.6 1966	19.4 1912	153.2 1926	31.7 1962	20.0 1949	147.3 1901	32.2 1896	13.8 1958	295.7 1937	1881	1881	Port Blair
31.7 1957	19.9 1961	129.3 1962	31.7 1954	21.1 1956	118.6 1959	31.3 1954	20.6 1952	132.6 1956	31.7 1953	20.6 1960	193.4 1955	31.8 1962	19.4 1958	122.2 1955	35.6 1952	16.7 1952	158.8 1957	1952	1952	Car Nicobar
31.4 1962	21.7 1962	139.2 1952	32.6 1959	21.3 1959	115.5 1956	31.7 1954	21.1 1956	102.4 1962	33.9 1953	21.7 1959	137.2 1960	33.3 1960	21.1 1955	104.4 1961	34.4 1953	20.6 1954	87.3 1957	1952	1952	Nan Cowry
33.1 1957	21.1 1954	36.9 1957	31.7 1957	21.1 1955	141.6 1955	31.4 1957	21.6 1961	141.0 1953	30.8 1957	22.1 1961	162.6 1952	30.6 1957	21.1 1955	135.6 1960	31.6 1961	21.6 1961	150.2 1962	1952	1952	Kondul
37.1 1961	21.9 1962	32.7 1959	37.0 1961	20.9 1959	136.7 1962	36.9 1961	19.6 1959	160.3 1956	31.4 1958	17.1 1962	152.4 1962	30.9 1961	11.1 1961	37.0 1961	27.4 1958	7.2 1961	15.4 1962	1958	1959	Assam (including Mani- pur, Tripura) Pasighat
37.2 1951	21.5 1961	175.9 1969	36.7 1955	19.5 1958	118.1 1960	36.1 1963	20.3 1960	140.3 1954	35.9 1955	14.2 1960	73.6 1953	31.7 1952	7.3 1961	31.3 1957	36.1 1960	2.7 1961	22.9 1951	1951	1951	Dibrugarh (Mohanbari)
32.8 1963	16.0 1961	112.4 1956	37.1 1961	21.5 1959	112.2 1959	36.6 1953	19.1 1959	77.2 1959	36.7 1962	15.0 1957	157.5 1956	31.2 1962	10.7 1955	20.0 1961	30.6 1962	7.1 1962	25.3 1957	1956	1956	Digboi
37.1 1953	20.6 1953	199.9 1956	36.7 1957	21.7 1956	111.1 1960	36.4 1963	21.1 1960	155.2 1954	35.0 1955	19.6 1955	113.1 1956	31.7 1954	8.2 1960	15.7 1957	26.3 1954	3.1 1961	24.6 1951	1954	1954	North Lakhimpur
38.5 1953	20.6 1959	115.9 1929	37.1 1931	18.3 1943	114.1 1941	36.9 1963	19.4 1896	163.4 1952	33.6 1936	15.1 1936	99.1 1922	32.2 1836	9.4 1929	53.9 1956	24.9 1916	1.4 1916	36.3 1936	1881	1871	Sibsagar
36.6 1962	21.1 1962	63.6 1959	36.9 1959	18.2 1963	71.2 1963	36.8 1964	20.5 1959	80.2 1959	34.3 1959	13.1 1962	92.1 1962	31.6 1954	8.3 1962	47.2 1963	27.7 1960	3.3 1963	40.4 1952	1959	1958	Gohpur
35.1 1963	23.2 1963	96.0 1962	34.1 1963	23.3 1964	115.1 1957	36.2 1963	22.7 1963	96.3 1960	35.0 1962	11.9 1962	70.5 1963	28.6 1962	10.9 1963	39.2 1963	37.9 1963	6.1 1963	27.9 1956	1962	1954	Majbat
36.7 1961	21.7 1956	95.7 1955	37.2 1955	18.2 1956	116.1 1954	36.3 1957	21.4 1960	82.5 1953	35.0 1955	17.6 1957	76.0 1952	30.6 1957	9.1 1961	35.3 1963	23.9 1960	5.0 1951	83.8 1963	1951	1951	Jorhat (Aerodrome)
37.6 1941	20.9 1961	61.3 1961	36.9 1962	18.0 1962	106.4 1956	37.2 1962	20.3 1959	105.0 1963	33.4 1963	15.2 1962	113.3 1955	31.9 1958	9.1 1961	86.4 1956	29.5 1962	5.2 1961	20.6 1951	1958	1954	Tangla
35.7 1962	21.2 1962	117.7 1955	37.1 1961	20.5 1968	106.6 1952	36.7 1961	20.4 1959	102.9 1917	36.1 1956	14.3 1958	130.2 1959	31.3 1962	10.6 1953	59.9 1961	23.9 1960	6.1 1913	19.3 1907	1961	1961	Tezpur
36.7 1966	18.3 1957	115.8 1960	36.7 1960	17.2 1962	122.0 1960	36.7 1963	21.7 1960	96.0 1958	34.4 1956	17.6 1963	50.5 1915	31.7 1958	8.8 1957	36.3 1955	29.4 1960	6.3 1959	25.4 1957	1951	1954	Golaghat
37.3 1962	21.9 1960	115.0 1962	37.2 1960	22.3 1958	106.3 1959	36.3 1955	19.9 1962	99.3 1966	35.1 1959	17.6 1962	54.0 1960	34.5 1951	11.1 1960	28.0 1963	29.5 1963	8.8 1963	16.0 1963	1958	1958	Rangia
44.9 1961	23.8 1963	116.1 1961	37.8 1955	21.3 1963	157.7 1960	37.5 1961	20.6 1959	150.8 1960	35.1 1959	18.3 1963	33.2 1961	33.3 1953	12.2 1962	38.8 1961	30.0 1962	8.3 1961	8.1 1953	1958	1958	Chaparmukh
36.7 1962	21.1 1963	304.0 1960	36.5 1959	21.3 1966	112.4 1962	36.7 1963	18.3 1955	221.7 1956	36.1 1956	16.1 1962	91.2 1962	32.6 1958	10.8 1962	51.2 1963	31.1 1955	6.2 1961	19.6 1955	1954	1954	Goalpara
37.2 1962	20.6 1955	252.9 1933	37.8 1933	21.1 1955	157.7 1953	37.2 1923	20.0 1955	131.9 1949	35.6 1955	15.6 1921	94.3 1959	32.2 1956	10.6 1926	47.6 1963	29.4 1962	5.0 1918	21.3 1957	1906	1906	Gauhati
36.0 1962	21.9 1958	102.9 1951	36.1 1953	22.8 1955	129.2 1960	35.9 1957	21.2 1959	89.7 1953	34.4 1955	15.2 1957	60.2 1951	32.5 1961	10.6 1956	19.8 1956	30.9 1957	4.9 1961	16.5 1952	1951	1951	Gauhati (Bhorjor)
37.9 1959	21.3 1963	160.0 1957	36.1 1957	15.1 1957	195.8 1957	35.8 1963	21.4 1960	273.9 1960	33.8 1962	15.6 1957	220.6 1958	31.4 1958	9.4 1962	40.8 1963	28.2 1958	5.1 1961	3.0 1961	1957	1957	Dhubri (Rupsi)
47.8 1930	22.2 1951	285.7 1961	35.6 1942	21.7 1957	166.9 1924	35.0 1966	21.7 1960	363.6 1960	33.9 1956	17.2 1962	135.2 1919	31.1 1955	11.7 1963	82.5 1952	27.6 1944	7.8 1922	17.3 1891	1881	1881	Dhubri
37.9 1962	17.8 1955	144.7 1936	38.3 1953	21.1 1956	113.9 1952	37.2 1951	20.0 1953	91.7 1954	35.6 1963	14.7 1957	107.9 1952	32.2 1951	9.4 1953	101.6 1955	38.9 1962	6.1 1955	21.1 1957	1951	1951	Lunding
33.9 1951	18.6 1963	229.1 1951	35.6 1957	17.9 1963	204.7 1956	37.2 1956	17.4 1959	279.2 1966	32.8 1963	13.9 1963	164.3 1955	32.8 1952	9.1 1962	39.4 1952	30.6 1951	6.7 1961	5.3 1956	1951	1951	Tura
32.7 1961	18.9 1956	119.0 1960	34.2 1957	19.5 1962	105.2 1962	32.2 1959	17.9 1939	85.3 1957	32.7 1960	13.2 1957	237.1 1959	27.9 1961	10.6 1961	234.2 1955	25.6 1958	7.9 1961	35.6 1954	1954	1954	Hailang
37.2 1942	21.8 1961	164.4 1961	36.9 1958	22.4 1962	177.4 1961	37.4 1963	21.8 1963	124.4 1961	36.2 1956	16.3 1963	151.4 1963	32.4 1958	11.3 1961	30.0 1966	31.2 1960	8.5 1961	4.3 1958	1958	1958	Silchar (Kumbhirgram)
39.4 1896	21.1 1897	234.7 1915	38.3 1906	19.4 1906	151.9 1950	36.3 1887	18.9 1890	173.6 1939	36.7 1941	15.6 1914	186.2 1912	35.0 1906	10.6 1902	174.2 1955	31.7 1913	6.1 1913	100.8 1883	1881	1881	Silchar
32.0 1962	18.1 1961	71.6 1962	31.1 1961	20.3 1962	87.3 1963	32.3 1963	19.3 1962	41.6 1963	31.1 1962	11.7 1961	92.6 1963	28.2 1961	4.3 1961	23.2 1961	24.4 1962	0.8 1962	3.6 1961	1961	1961	Impfal (Tulihal)
37.8 1963	19.7 1961	79.9 1959	36.6 1961	21.8 1961	80.4 1961	35.6 1960	21.0 1963	83.8 1962	34.5 1962	17.7 1960	138.1 1959	31.9 1961	10.3 1961	57.2 1966	31.5 1960	6.3 1961	0 1959	1959	1959	Kailashahar
36.4 1962	22.2 1958	136.9 1954	36.4 1957	22.8 1955	238.8 1953	35.3 1962	21.7 1963	115.6 1956	35.0 1955	14.9 1957	127.9 1963	32.8 1955	9.8 1961	104.7 1955	30.0 1960	5.8 1961	10.9 1956	1953	1953	Agartala
40.4 1962	21.6 1960	206.3 1960	36.7 1957	22.1 1957	313.1 1961	39.2 1958	20.3 1963	151.6 1963	34.4 1962	13.3 1955	161.4 1959	33.3 1952	7.4 1961	20.3 1952	31.1 1951	2.4 1961	5.3 1966	1951	1951	Baghdogra
37.2 1933	22.2 1949	300.4 1892	37.2 1933	21.1 1918	220.8 1936	36.1 1933	21.1 1944	347.7 1886	35.6 1926	15.6 1947	214.3 1909	33.3 1952	9.3 1914	92.7 1924	30.0 1951	5.6 1918	53.9 1932	1881	1886	Jalpaiguti
36.5 1962	22.7 1960	206.6 1961	36.3 1957	22.8 1954	315.5 1957	35.6 1953	21.0 1959	329.7 1960	35.0 1955	15.1 1957	77.5 1958	31.7 1958	9.7 1962	29.9 1963	29.4 1953	4.2 1961	23.8 1958	1953	1953	Cooch Behar
37.7 1962	22.4 1962	46.8 1963	35.5 1961	22.2 1962	71.5 1962	35.7 1963	20.9 1963	60.4 1962	35.2 1962	15.3 1963	94.8 1963	32.5 1962	7.3 1962	89.6 1963	29.8 1962	4.7 1961	1.4 1961	1961	1961	Balurghat
38.3 1962	21.1 1906	191.8 1958	36.7 1957	22.8 1948	188.0 1918	36.1 1896	21.7 1940	215.9 1953	35.6 1932	15.0 1908	173.7 1894	33.3 1896	8.3 1							

Sub-division and Station	January			February			March			April			May			June			
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	
Gangetic West Bengal (Contd.)																			
Asansol	31·7 1958	5·6 1934	51·6 1944	36·1 1952	5·0 1950	71·3 1961	41·7 1941	11·1 1923	44·2 1949	45·0 1954	10·4 1960	46·7 1945	47·2 1944	18·3 1927	127·0 1938	47·2 1926	20·6 1922	174·5 1957	
Shanti Niketan	29·9 1961	5·2 1962	6·8 1962	33·3 1963	8·6 1961	46·5 1961	38·9 1962	12·8 1961	25·5 1961	44·3 1961	18·9 1963	16·0 1963	44·5 1961	19·5 1962	91·9 1962	42·1 1961	22·3 1962	75·6 1962	
Krishnanagar	34·4 1912	3·9 1934	51·8 1898	37·8 1896	3·9 1886	73·7 1947	42·2 1941	7·8 1898	87·4 1886	45·0 1954	13·9 1886	114·5 1946	46·1 1958	16·7 1893	138·4 1918	45·1 1958	20·0 1907	209·8 1890	
Purulia	31·1 1958	5·9 1962	20·4 1962	35·0 1952	7·2 1956	25·2 1961	41·7 1955	13·5 1957	35·3 1956	43·9 1954	16·1 1955	52·2 1962	45·6 1955	20·0 1952	48·8 1959	45·6 1953	20·0 1962	71·3 1962	
Bankura*	23·9 1963	.. ..	33·0 1957	34·3 1963	.. ..	53·2 1961	38·1 1963	.. ..	34·0 1960	40·9 1963	18·1 1963	64·8 1962	41·5 1963	20·1 1965	45·4 1958	41·6 1962	24·9 1962	84·6 1963
Burdwan	36·7 1951	4·4 1962	43·7 1944	37·8 1896	4·4 1905	84·1 1938	41·7 1941	10·0 1928	115·8 1887	45·0 1897	16·1 1886	116·8 1909	46·1 1916	18·3 1882	244·3 1893	45·6 1926	20·0 1953	175·3 1928	
Barrackpore (Aerodrome)	31·1 1958	5·0 1962	39·9 1957	34·6 1960	8·2 1961	20·1 1957	40·1 1958	11·0 1957	34·5 1960	41·9 1959	17·3 1957	35·0 1958	42·9 1958	16·6 1962	79·2 1961	43·3 1958	19·9 1957	118·4 1963	
Calcutta (Dum Dum)	31·7 1958	6·1 1962	27·2 1957	35·6 1952	7·6 1961	17·0 1957	40·6 1955	12·2 1957	24·8 1960	42·8 1954	18·1 1957	80·4 1962	42·9 1958	17·9 1962	53·8 1963	41·8 1957	21·7 1953	129·0 1956	
Calcutta	31·9 1958	6·7 1899	46·7 1943	36·7 1952	7·2 1950	80·8 1906	41·1 1941	10·0 1898	69·9 1907	43·3 1954	16·1 1905	107·4 1918	43·7 1958	18·8 1887	156·2 1893	43·9 1924	21·1 1900	303·5 1908	
Midnapore	33·9 1912	6·1 1934	54·6 1957	37·2 1922	5·6 1950	66·0 1931	42·8 1953	11·1 1925	79·5 1920	45·6 1938	17·2 1953	78·2 1949	46·7 1943	19·4 1950	145·3 1956	47·2 1942	20·0 1950	276·9 1950	
Contai	31·7 1958	8·8 1963	41·0 1959	37·2 1951	10·0 1953	29·0 1954	40·1 1958	14·7 1957	23·4 1951	41·2 1961	19·3 1963	37·3 1962	41·1 1960	17·2 1951	245·1 1960	38·8 1957	13·8 1961	207·5 1956	
Sagar Island	30·6 1931	7·8 1899	41·4 1948	33·9 1952	7·2 1950	77·0 1885	38·3 1934	12·2 1906	125·7 1907	39·4 1908	12·9 1962	78·7 1921	38·3 1908	17·8 1893	202·7 1932	40·0 1929	19·4 1925	359·2 1927	
Sandheads	32·6 1961	13·5 1960	33·0 1944	32·8 1961	18·2 1962	65·3 1958	36·4 1962	17·8 1960	62·7 1940	35·9 1960	22·2 1963	72·6 1911	35·5 1961	21·4 1963	87·9 1950	37·0 1961	16·7 1962	334·0 1940	
Orissa																			
Baripada	33·8 1958	6·6 1963	28·4 1959	33·3 1959	9·9 1961	46·3 1957	41·6 1958	15·0 1959	33·5 1956	45·1 1961	18·2 1961	57·4 1962	46·9 1958	20·6 1963	61·3 1963	47·8 1958	22·5 1960	181·1 1956	
Jharsuguda	32·2 1958	6·1 1963	42·4 1953	35·6 1956	8·3 1961	46·7 1961	42·8 1955	11·1 1961	58·7 1951	41·8 1961	15·8 1957	51·7 1952	46·7 1956	19·3 1963	63·5 1963	46·1 1955	21·1 1955	159·2 1958	
Keonjhar	29·7 1958	7·5 1962	17·0 1962	33·8 1960	9·3 1958	82·0 1963	38·3 1959	14·3 1960	45·2 1962	42·1 1961	17·1 1962	26·1 1963	42·7 1962	17·1 1962	133·8 1958	43·3 1958	20·5 1961	87·0 1963	
Balasure	33·3 1958	7·2 1934	85·1 1908	38·3 1934	6·7 1905	76·2 1923	40·6 1955	11·7 1927	70·4 1897	45·0 1892	16·7 1905	71·4 1947	46·7 1897	19·4 1893	221·5 1887	46·1 1926	20·0 1900	217·2 1956	
Sambalpur	33·9 1889	4·4 1954	90·7 1957	37·8 1896	5·6 1950	56·8 1961	43·3 1888	11·1 1954	46·2 1951	45·6 1942	14·4 1905	45·2 1909	46·1 1962	20·6 1951	107·9 1891	46·7 1955	19·4 1903	234·5 1882	
Angul	34·4 1928	6·7 1923	48·8 1906	37·2 1934	8·9 1950	118·1 1961	42·2 1953	10·6 1906	52·0 1960	45·6 1961	16·1 1920	65·5 1928	47·2 1921	13·9 1910	84·3 1946	46·1 1958	21·1 1954	156·0 1925	
Cuttack	35·6 1882	7·8 1923	61·0 1919	38·9 1896	10·6 1934	93·0 1917	42·8 1902	14·4 1906	99·1 1911	45·0 1903	17·2 1905	94·5 1899	47·7 1957	20·6 1946	142·7 1893	47·2 1948	21·7 1955	205·7 1925	
Chandbali	32·8 1950	7·8 1962	35·1 1948	37·8 1934	10·0 1942	50·2 1961	40·6 1954	13·9 1952	72·5 1962	43·3 1947	17·2 1943	52·3 1944	44·4 1961	17·8 1931	186·4 1936	46·7 1942	18·3 1931	164·3 1936	
Bolangir	32·3 1958	7·6 1963	9·4 1959	38·8 1963	10·0 1961	53·2 1961	40·9 1959	15·5 1958	17·8 1960	43·8 1962	17·9 1961	33·2 1961	45·3 1960	21·7 1963	19·6 1958	44·9 1958	21·4 1963	68·6 1961	
Phulbani	30·3 1960	1·6 1963	13·6 1961	34·1 1963	4·3 1963	49·8 1961	37·8 1962	9·8 1962	18·4 1960	41·8 1961	13·9 1960	14·6 1963	42·8 1962	18·3 1963	53·0 1961	41·8 1960	20·2 1961	104·0 1962	
Titlagarh	31·7 1957	6·1 1954	27·4 1953	36·4 1962	8·4 1963	39·0 1961	42·2 1955	13·9 1952	26·7 1954	45·0 1956	16·1 1962	23·1 1958	46·7 1956	17·4 1963	76·7 1956	47·2 1955	21·2 1962	103·9 1955	
Bhubaneswar	33·6 1958	9·4 1952	35·6 1953	37·2 1953	10·6 1956	52·6 1958	40·7 1959	15·9 1962	33·9 1954	43·9 1963	19·2 1963	42·6 1958	44·9 1958	15·0 1960	94·5 1955	45·0 1952	21·7 1955	91·4 1954	
Puri	32·8 1946	10·6 1893	53·1 1921	35·0 1954	11·7 1955	107·9 1897	38·9 1899	15·6 1906	57·9 1919	41·1 1947	18·9 1946	82·0 1919	42·2 1943	16·7 1893	171·7 1893	39·4 1949	19·4 1908	200·4 1895	
Gopalpur	32·8 1946	10·0 1899	47·2 1908	36·7 1954	11·7 1934	134·4 1937	40·0 1956	15·6 1925	95·8 1957	38·9 1940	19·4 1955	55·1 1894	43·3 1915	20·0 1948	126·5 1940	41·9 1958	21·1 1939	171·7 1914	
Koraput	29·4 1958	4·1 1962	53·3 1953	31·7 1953	5·6 1963	10·2 1957	36·1 1953	10·6 1952	35·6 1954	38·3 1961	15·0 1956	53·9 1956	38·9 1956	16·7 1963	34·9 1951	40·0 1953	13·3 1961	234·6 1959	
Jhans Plateau																			
Dumka	37·2 1962	4·4 1945	75·7 1957	36·1 1952	5·0 1905	77·5 1940	42·2 1953	8·3 1906	70·6 1891	45·0 1951	15·0 1905	47·0 1946	46·7 1916	17·2 1934	106·2 1914	46·7 1926	20·0 1922	170·9 1927	
Daltonganj	32·2 1902	0 1923	77·2 1945	35·6 1914	0·6 1905	50·5 1908	42·8 1931	5·6 1893	36·8 1927	45·0 1898	11·7 1907	38·6 1914	46·7 1956	17·8 1932	62·2 1904	46·7 1897	11·9 1961	174·0 1907	
Hazaribagh	30·6 1881	1·3 1962	68·1 1945	33·3 1896	3·3 1905	63·5 1927	38·9 1892	6·7 1898	44·2 1946	41·7 1956	13·9 1944	60·5 1925	43·9 1897	16·1 1878	84·1 1887	43·4 1958	19·2 1961	249·2 1911	
Dhanbad	31·1 1958	7·4 1963	17·3 1957	33·9 1960	8·3 1961	49·7 1961	39·5 1958	13·3 1957	16·3 1958	43·4 1960	17·9 1963	27·9 1958	45·1 1957	19·0 1963	46·4 1963	45·9 1958	21·1 1962	96·2 1961	
Ranchi	31·4 1961	3·9 1946	52·1 1945	33·9 1956	2·8 1950	78·5 1913	39·4 1955	7·8 1898	82·3 1891	41·7 1938	10·4 1960	58·7 1944	43·3 1948	15·6 1952	104·7 1914	42·8 1962	14·8 1957	165·6 1898	
Ranchi Aerodrome	27·7 1958	5·0 1963	31·7 1959	33·3 1956	6·1 1961	43·8 1958	36·9 1959	10·4 1957	44·7 1956	41·0 1961	15·8 1959	49·5 1959	43·1 1962	18·9 1962	54·6 1959	42·3 1958	19·9 1959	76·4 1961	
Jamshedpur	31·2 1961	5·0 1963	11·4 1962	35·6 1953	8·9 1963	55·6 1961	41·7 1955	11·7 1954	33·8 1951	44·4 1961	17·2 1955	33·4 1962	46·1 1962	21·1 1963	48·6 1963	45·6 1953	21·7 1956	214·1 1953	
Jamshedpur (P.B.O.)	31·8 1958	4·7 1962	15·0 1954	36·1 1952	8·7 1963	52·0 1961	42·2 1955	11·7 1951	33·8 1951	44·4 1956	18·2 1963	46·2 1962	45·9 1958	19·1 1963	38·1 1955	46·6 1958	21·8 1961	108·5 1952	
Chaibasa	33·3 1911	4·4 1934	75·2 1901	37·2 1911	6·7 1934	75·7 1906	42·2 1955	11·7 1927	43·9 1891	45·0 1941	15·6 1944	80·3 1946	46·7 1948	18·3 1938	58·4 1893	46·1 1958	20·0 1932	131·3 1919	
Bihar Plains																			
Motihari	28·3 1902	2·2 1905	54·6 1900	35·6 1896	0 1905	66·0 1889	40·0 1941	5·6 1945	55·4 1891	42·2 1954	8·9 1905								

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temper- ature	Rain- fall	
40.0 1926	19.4 1947	269.7 1943	37.2 1932	21.7 1933	189.2 1935	36.6 1963	20.0 1946	269.0 1946	36.7 1932	15.0 1938	99.1 1929	36.1 1955	8.3 1926	99.1 1930	31.7 1946	5.8 1961	29.7 1929	1921	1916	Gangetic West Bengal— (contd.) Asansol
35.8 1962	23.2 1962	83.0 1961	31.2 1963	23.0 1962	60.0 1962	34.4 1963	23.1 1963	87.6 1962	33.8 1963	17.8 1961	55.5 1963	32.1 1963	11.2 1962	4.4 1963	29.7 1963	6.1 1961	0.1 1962	1961	1961	Shanti Niketan
37.2 1949	22.2 1955	244.3 1905	36.7 1956	21.1 1949	165.3 1926	37.2 1955	21.1 1987	293.9 1930	36.7 1960	14.4 1935	214.8 1959	36.1 1952	8.3 1934	151.1 1889	32.2 1954	5.0 1937	37.3 1954	1886	1886	Krishn nagar
36.7 1952	17.8 1953	142.3 1951	35.9 1953	17.2 1953	118.8 1969	36.1 1955	17.2 1953	181.6 1953	35.6 1951	16.7 1951	96.2 1961	32.2 1963	11.1 1952	55.4 1955	30.1 1957	5.7 1961	7.4 1956	1951	1951	Parulia
37.0 1962	23.2 1963	115.2 1962	35.4 1963	21.1 1963	78.0 1969	35.4 1963	22.6 1963	106.0 1963	33.9 1962	18.6 1963	76.0 1959	32.9 1963	15.1 1963	57.1 1953	30.5 1963	8.5 1963	7.4 1954	1962	1951	Bankura*
39.9 1897	20.0 1953	299.2 1905	36.1 1915	21.7 1954	269.6 1909	37.8 1928	20.0 1953	344.3 1956	36.7 1951	16.1 1951	216.3 1959	35.6 1966	16.6 1883	196.1 1946	31.7 1951	4.4 1961	69.6 1934	1881	1881	Burdwan
35.6 1948	21.7 1953	32.8 1960	37.2 1962	23.6 1959	36.3 1961	35.4 1957	23.1 1960	64.0 1959	31.3 1957	18.5 1957	211.1 1959	32.0 1962	11.6 1959	37.8 1958	29.9 1957	6.7 1962	0.5 1959	1957	1957	Barrackpore (Aerodrome)
37.2 1958	22.5 1957	157.2 1965	35.5 1965	21.4 1962	110.9 1961	35.6 1957	23.2 1959	211.4 1959	35.9 1957	16.7 1954	150.2 1959	33.9 1952	11.8 1960	40.9 1951	31.0 1963	7.8 1962	15.2 1954	1951	1951	Calcutta (Dum Dum)
39.7 1920	22.8 1940	133.6 1905	36.1 1944	23.3 1935	253.0 1888	36.1 1939	22.2 1940	369.1 1909	35.6 1957	17.2 1954	172.2 1982	33.9 1952	10.6 1883	85.1 1950	31.5 1963	7.2 1910	53.1 1883	1881	1881	Calcutta
37.2 1926	22.2 1943	169.8 1921	36.3 1941	21.7 1954	261.2 1891	37.4 1962	21.7 1952	314.5 1956	36.1 1907	15.6 1904	325.4 1942	33.9 1937	18.6 1954	111.3 1941	31.7 1957	6.1 1916	62.0 1914	1921	1886	Midnapore
35.7 1959	21.7 1952	123.5 1957	36.7 1951	22.8 1954	192.1 1960	35.0 1951	21.7 1959	240.0 1958	34.2 1957	18.3 1954	200.7 1955	33.8 1952	12.6 1960	64.8 1955	31.1 1956	8.3 1961	29.7 1954	1951	1951	Contai
36.1 1929	16.2 1960	351.1 1913	36.7 1903	21.1 1953	232.4 1954	36.1 1921	18.4 1962	295.5 1969	33.9 1916	17.2 1908	321.6 1933	32.8 1944	12.2 1883	113.3 1955	29.4 1907	9.4 1896	91.9 1947	1881	1881	Sagar Island
35.6 1963	17.2 1960	293.8 1921	35.3 1969	22.5 1969	176.3 1946	36.7 1963	22.0 1961	137.2 1946	36.2 1960	22.4 1956	174.6 1962	36.3 1962	22.3 1961	132.6 1915	36.6 1962	12.0 1961	144.8 1906	1960	1906	Sandheads
Orissa																				
35.2 1954	21.3 1962	99.8 1958	35.3 1962	23.8 1962	198.2 1966	36.4 1963	23.4 1963	129.8 1961	35.9 1957	16.6 1962	187.6 1959	31.9 1963	11.1 1962	58.4 1958	32.6 1957	6.7 1961	1.3 1963	1956	1956	Baripada
37.0 1958	21.6 1959	139.8 1961	33.7 1961	23.2 1956	161.6 1969	34.8 1957	21.4 1961	120.8 1961	36.1 1957	13.9 1954	116.2 1962	33.1 1957	8.9 1960	22.1 1953	31.8 1963	6.1 1955	11.2 1961	1954	1951	Jharsuguda
41.4 1962	20.9 1962	101.6 1953	32.2 1963	21.8 1960	181.0 1960	32.8 1963	20.4 1962	173.4 1963	31.9 1969	15.5 1962	40.6 1959	30.6 1963	10.1 1960	13.1 1960	30.1 1962	7.1 1959	36.2 1960	1958	1958	Keonjhar
34.3 1957	20.0 1913	147.2 1940	35.6 1953	21.7 1933	155.2 1960	35.6 1922	22.2 1919	199.1 1961	36.1 1925	15.6 1926	323.3 1941	34.4 1896	8.9 1892	184.7 1950	31.7 1944	6.7 1897	78.7 1897	1891	1886	Balasore
39.6 1902	18.3 1910	101.3 1889	35.0 1954	21.1 1956	290.7 1966	36.1 1930	20.6 1921	220.4 1961	36.1 1920	12.3 1921	175.7 1956	32.9 1946	7.8 1926	106.2 1930	34.1 1963	4.4 1902	39.1 1885	1881	1881	Sambalpur
33.9 1926	21.0 1959	243.9 1932	36.1 1945	21.1 1956	257.3 1931	35.7 1960	16.7 1961	143.2 1949	35.0 1914	14.4 1926	117.9 1929	33.9 1918	8.9 1910	99.1 1915	31.7 1957	7.2 1937	27.5 1962	1966	1906	Angul
37.0 1957	21.1 1943	210.8 1943	37.2 1950	21.7 1943	129.8 1951	36.7 1901	21.7 1963	249.2 1894	33.9 1886	16.7 1926	292.6 1899	35.0 1896	10.6 1937	195.6 1950	33.3 1954	8.9 1922	54.9 1909	1880	1881	Cuttack
36.7 1929	21.7 1946	321.9 1941	35.3 1961	22.2 1933	272.2 1963	35.6 1951	21.7 1959	320.8 1959	35.6 1951	17.8 1952	169.7 1952	31.9 1940	11.7 1959	207.8 1950	32.8 1949	8.3 1961	49.5 1917	1931	1931	Chandbali
40.0 1963	21.0 1958	325.3 1953	38.4 1960	21.1 1953	116.9 1969	38.4 1969	21.5 1963	33.2 1959	34.6 1962	16.6 1966	100.6 1963	36.6 1966	11.0 1962	12.8 1959	32.6 1963	7.6 1961	16.4 1960	1958	1958	Bolangir
33.4 1962	20.4 1960	72.8 1960	31.7 1960	21.9 1963	152.7 1962	33.3 1960	20.3 1962	124.8 1963	32.3 1960	12.8 1960	27.1 1966	30.5 1962	5.6 1961	3.8 1963	30.6 1963	1.7 1961	6.4 1961	1960	1960	Phulbani
40.1 1962	21.1 1958	255.3 1958	36.2 1961	21.0 1963	186.3 1953	35.0 1953	21.7 1961	147.1 1952	37.3 1959	14.6 1963	68.5 1963	33.3 1956	10.6 1952	26.7 1958	32.0 1963	7.9 1961	4.0 1960	1951	1951	Tidagarh
36.1 1952	20.4 1960	144.4 1958	35.9 1952	23.8 1961	107.7 1951	35.0 1957	21.1 1961	163.3 1954	35.1 1957	16.1 1954	188.2 1954	35.0 1952	12.8 1953	15.6 1955	32.7 1957	9.4 1955	10.9 1954	1952	1952	Bhubaneswar
36.7 1938	21.7 1944	301.5 1918	36.7 1891	21.7 1893	187.7 1896	39.1 1961	17.2 1893	219.3 1934	36.1 1899	16.7 1901	316.2 1928	33.9 1914	13.9 1926	242.8 1915	32.8 1896	10.6 1895	88.9 1909	1891	1891	Puri
38.3 1957	20.6 1929	200.9 1936	37.2 1928	19.4 1911	229.9 1940	36.7 1920	20.6 1917	196.9 1886	36.3 1957	16.7 1897	281.7 1923	33.5 1957	12.2 1926	261.6 1923	32.2 1951	10.0 1902	105.7 1909	1891	1881	Gopalpur
31.1 1960	16.1 1957	232.7 1951	30.6 1958	15.6 1957	142.5 1957	32.8 1963	16.7 1957	110.8 1959	31.1 1963	10.6 1954	98.3 1958	28.9 1959	8.3 1961	43.7 1951	27.8 1963	3.9 1961	16.8 1952	1951	1951	Koraput
Bihar Plateau																				
40.6 1897	21.1 1948	146.3 1921	37.2 1938	21.1 1948	191.5 1888	36.7 1938	20.0 1956	266.9 1935	36.1 1957	13.3 1954	158.7 1890	35.0 1896	6.7 1934	115.1 1930	30.6 1954	5.0 1935	35.6 1913	1891	1886	Dumka
43.3 1902	19.4 1928	290.8 1920	37.2 1903	20.6 1916	197.7 1963	38.9 1958	17.2 1899	187.5 1946	37.2 1899	10.0 1921	75.2 1937	33.9 1918	5.0 1912	74.9 1924	31.4 1960	1.7 1930	41.9 1940	1896	1896	Daltonganj
38.9 1901	20.6 1940	221.7 1953	33.7 1957	20.0 1942	180.1 1885	33.3 1960	17.8 1950	167.4 1963	33.3 1957	11.1 1934	149.4 1963	31.7 1896	4.4 1879	95.0 1924	29.4 1950	0.5 1961	39.4 1885	1878	1881	Hazaribagh
44.0 1962	21.6 1957	112.9 1963	35.6 1957	21.7 1962	81.0 1959	35.1 1958	21.4 1963	82.6 1958	34.9 1957	16.8 1961	110.8 1959	32.7 1962	11.8 1961	10.2 1963	30.0 1957	4.1 1961	26.6 1962	1957	1957	Lhanbad
38.3 1902	13.2 1961	215.9 1896	35.1 1963	13.2 1961	147.3 1945	37.9 1962	14.9 1961	168.4 1963	36.8 1963	7.1 1961	231.1 1941	32.2 1896	5.6 1949	79.5 1930	30.1 1962	4.4 1955	32.8 1962	1891	1891	Ranchi
34.6 1962	20.8 1960	178.8 1958	32.0 1958	20.8 1960	120.0 1960	32.0 1957	19.4 1957	130.1 1963	31.9 1957	14.1 1961	111.0 1959	29.7 1963	9.2 1961	7.6 1963	28.3 1962	4.8 1961	21.4 1962	1956	1956	Ranchi Aerodrome
37.3 1962	23.1 1961	187.5 1952	35.6 1957	23.2 1955	169.2 1953	35.6 1958	21.1 1956	160.4 1958	35.6 1951	15.0 1954	115.4 1959	33.2 1963	8.9 1952	69.1 1953	31.1 1962	5.7 1961	12.5 1956	1951	1951	Jamshedpur
36.8 1958	21.7 1956	187.5 1952	35.1 1959	22.0 1959	100.2 1963	35.1 1958	20.6 1956	129.1 1957	35.6 1951	15.0 1957	67.0 1962	32.3 1963	8.9 1952	28.5 1951	31.3 1957	5.4 1961	12.7 1956	1951	1951	Jamshedpur P.B.O.
41.1 1926	21.7 1943	194.8 1929	37.2 1947	21.1 1913	200.7 1941	36.7 1911	21.1 1950	155.5 1953	36.6 1957	13.9 1954	214.6 1912	33.9 1937	7.8 1934	82.0 1941	31.1 1960	5.0 1913	38.1 1907	1911	1891	Chaibasa
Bihar Plains																				
42.8 1955	19.0 1959	254.8 1935	37.2 1953	21.7 1884	203.2 1915	37.2 1953	20.0 1890	214.6 1898	36.1 1954	12.8 1895	158.2 1893	35.6 1955	7.2 1949	50.0 1932	28.9 1955	1.7 1896	33.8 1932	1884	1886	Motihari
38.1 1962	21.7 1956	196.9 1956	39.0 1957	21.4 1960	133.6 1955	37.3 1961	20.6 1955	228.6 1960	35.8 1960	12.8 1957	110.0 1961	34.0 1958	9.2 1962	32.0 1956	31.1 1955	5.6 1961	6.0 1961			

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Bihar Plains (Contd.)																		
Darbhanga	28.9 1932	1.1 1933	57.7 1957	33.3 1943	1.1 1905	43.9 1949	40.6 1941	7.2 1906	36.3 1897	43.9 1922	11.7 1912	60.5 1899	43.8 1958	17.2 1948	74.4 1923	43.3 1931	19.4 1930	243.8 1883
Muzaffar, ur	..	..	25.4 1961	..	..	8.9 1951	..	..	53.3 1960	..	..	30.5 1952	..	..	55.9 1961	..	..	99.1 1952
Chagra	28.0 1963	5.0 1963	50.4 1959	39.6 1933	6.4 1961	15.0 1951	40.8 1958	11.9 1967	18.3 1960	43.9 1961	15.4 1960	17.2 1962	45.4 1960	20.0 1963	27.9 1954	41.8 1950	20.4 1960	135.4 1952
Hatua	28.9 1932	1.7 1935	86.4 1931	31.4 1936	1.7 1931	11.7 1932	43.4 1941	5.7 1927	40.6 1938	43.3 1931	11.7 1935	114.3 1925	44.9 1916	15.6 1935	220.5 1837	42.8 1933	17.8 1906	268.2 1881
Lahar	28.1 1951	2.8 1955	57.4 1957	34.1 1956	2.2 1905	40.6 1949	40.6 1941	7.8 1906	53.1 1931	43.3 1935	14.4 1935	47.0 1962	45.6 1941	17.2 1932	100.2 1837	46.1 1931	20.0 1912	350.5 1897
Patna Aerodrom	24.8 1938	3.6 1962	51.3 1931	31.4 1932	6.1 1951	11.0 1951	10.0 1951	10.4 1957	37.0 1939	45.3 1935	13.4 1963	32.8 1935	45.4 1958	17.8 1934	39.6 1963	45.6 1933	21.1 1952	90.4 1953
Atrah	..	..	103.1 1957	..	..	50.1 1951	..	..	36.5 1937	..	..	69.9 1931	..	..	123.0 1939	..	..	105.4 1933
Bhagalpur	29.4 1938	6.7 1956	91.2 1931	35.3 1936	8.9 1951	9.3 1951	50.1 1931	12.1 1937	16.5 1930	33.9 1935	13.3 1955	25.0 1931	11.4 1931	16.1 1935	70.3 1960	45.9 1931	21.1 1957	91.5 1932
Sabaur	28.0 1938	0.6 1934	39.6 1957	35.3 1949	2.8 1933	41.7 1942	41.1 1941	3.9 1945	31.3 1940	43.3 1950	13.3 1957	47.5 1942	45.1 1958	16.1 1934	58.6 1939	46.1 1941	19.4 1934	170.2 1930
Jamui	30.7 1938	3.8 1962	52.9 1931	35.9 1931	6.3 1961	13.4 1961	40.3 1960	10.0 1962	24.4 1932	41.4 1935	14.4 1.63	27.5 1963	45.3 1963	19.1 1961	62.7 1932	45.6 1931	13.3 1959	63.6 1936
Delhi	33.6 1953	4.3 1951	86.8 1933	31.3 1932	7.5 1967	17.9 1932	11.1 1933	12.1 1937	6.4 1960	41.1 1935	17.2 1935	27.9 1931	46.7 1951	19.4 1960	54.0 1959	36.1 1960	20.9 1961	230.9 1961
Gaya	31.7 1937	2.9 1962	66.9 1931	33.5 1936	2.9 1938	31.8 1985	41.7 1941	8.9 1945	37.6 1931	45.9 1931	11.1 1936	11.1 191	46.7 1943	17.1 1933	65.0 1963	37.2 1931	19.3 1913	231.6 1863
Uttar Pradesh (East)																		
Kheri	27.8 1938	2.3 1935	49.8 1931	31.3 1931	3.1 193	61.6 1931	33.1 1931	9.7 1934	37.2 1962	47.6 1961	15.0 1931	31	45.4 1930	15.7 1936	43.7 1936	46.1 1931	17.3 1930	102.6 1961
Bahraich	23.9 1936	0.6 1936	57.7 1943	31.3 1932	0.6 1901	49.5 1935	40.5 1941	5.6 1914	59.5 1931	44.4 1931	11.1 1935	91.0 1909	45.6 1953	15.6 1941	38.9 1933	46.7 1938	13.3 1914	267.5 1933
Nautanwa	23.8 1962	2.3 1955	33.0 1937	1.7 1936	5.2 1937	27.2 1962	38.9 1935	9.6 1939	74.3 1932	33.3 1936	12.9 1939	59.4 1939	46.7 1952	16.6 1960	83.6 1956	31.4 1933	23.1 1960	142.6 1935
Hardoi	23.9 1932	2.3 1935	51.9 1937	31.3 1931	5.0 1931	35.1 1931	38.9 1933	9.4 1933	40.6 1937	33.9 1961	13.9 1935	6.3 1931	45.3 1939	19.3 1935	26.9 1956	43.3 1931	20.6 1954	134.1 1932
adnoC	23.9 1946	1.4 1933	52.6 1935	31.3 1931	1.3 1931	41.4 1935	41.4 1941	5.6 1945	43.4 1941	44.4 1945	13.9 1935	71.4 1931	40.9 1938	15.9 1960	101.1 1936	35.7 1942	16.7 1936	127.3 1933
Meerut	30.6 1943	1.1 1946	95.3 1833	35.9 1921	1.7 1933	61.5 1924	41.7 1945	7.2 1945	23.2 1940	15.8 1933	12.8 1935	120.5 1939	47.2 1944	17.8 1836	103.4 1891	48.3 1931	19.4 1886	229.4 1839
Lucknow (Amnusi)	23.3 1932	0.6 1935	42.4 1939	31.2 1933	4.1 1937	22.1 1934	39.4 1953	6.1 1934	25.4 1952	33.3 1934	12.3 1963	16.7 193	45.0 1962	17.9 1963	57.0 1939	45.6 1933	21.1 1937	109.1 1932
Faizabad	25.9 1961	3.4 1962	30.1 1962	31.1 1963	1.9 1931	44.2 1962	37.6 1969	9.7 1961	16.7 1961	42.5 1931	13.3 1963	9.9 1931	13.5 1939	17.7 1939	44.9 1933	43.6 1960	21.3 1963	37.5 1960
Gorakhpur	0.6 1937	1.7 1933	72.4 1933	35.1 1938	2.3 1933	33.0 1949	41.7 1941	8.3 1927	47.2 1931	43.9 1936	12.2 1905	67.4 1837	41.3 1936	16.7 1937	110.2 1935	35.5 1932	15.1 1949	261.7 1931
Kanpur	31.1 1939	1.7 1939	31.5 1933	35.6 1933	0.6 1933	53.2 1932	42.8 1931	7.7 1931	61.7 1931	43.6 1933	11.1 1935	25.9 1931	47.2 1941	17.3 1931	67.3 1931	47.2 1931	20.6 1922	113.4 1918
Kanpur (Aerodrom)	26.2 1939	1.8 1933	43.3 1932	31.3 1931	4.7 1965	19.4 1939	33.3 1939	9.9 1962	6.5 1930	44.6 1961	15.6 1939	5.8 1963	46.6 1962	11.3 1960	31.0 1963	45.7 1960	21.6 1939	23.4 1934
Sultanpur	27.3 1961	3.3 1933	51.5 1939	34.4 1936	6.3 1931	38	37.9 1939	11.1 1939	10.7 1960	44.4 1961	15.9 1931	16.4 1932	45.6 1967	21.4 1939	28.4 1939	45.6 1968	22.0 1963	73.6 1962
Azamgarh	23.9 1951	1.6 1932	33.9 1937	33.0 1932	2.9 1935	37.6 1939	43.3 1949	9.5 1933	23.7 1933	44.4 1961	14.8 1969	14.2 1935	45.6 1933	16.0 1939	30.0 1939	47.9 1960	20.2 1961	81.5 1950
Fatehpur	32.2 1943	1.1 1945	64.1 1962	35.0 1936	2.8 1939	41.8 1942	41.7 1933	8.3 1943	52.3 1936	35.9 1967	11.4 1946	37.1 1935	47.2 1932	19.3 1960	17.0 1948	46.7 1935	21.1 1947	74.7 1935
Ballia	23.8 1961	3.9 1937	43.6 1933	33.4 1930	5.9 1937	53.3 1931	49.0 1962	8.9 1930	31.9 1960	41.5 1931	13.9 1937	11.4 1969	45.7 1938	17.7 1936	42.0 1939	45.5 1967	21.1 1939	93.8 1938
Banda	32.2 1938	0.6 1932	65.6 1931	35.6 1936	3.3 1937	35.8 1937	41.4 1933	9.8 1939	29.1 1939	45.8 1931	13.1 1963	9.4 1961	47.3 1939	19.2 1933	27.0 1931	47.2 1938	21.6 1962	80.5 1937
Allahabad (Banchnali)	31.1 1931	2.2 1936	71.9 1909	33.1 1936	1.1 1935	51.3 1938	41.7 1931	7.2 1906	34.5 1933	45.0 1961	12.8 1905	26.4 1922	47.2 1922	17.2 1934	35.6 1917	47.8 1901	19.4 1930	176.9 1916
Varanasi (Babatpur)	29.4 1938	0.3 1963	37.8 1939	31.4 1932	3.8 1933	21.0 1934	41.1 1934	10.0 1951	11.9 1937	43.9 1961	11.4 1963	5.1 1937	46.2 1961	12.5 1963	26.8 1939	45.1 1933	14.3 1963	75.7 1935
Varanasi	31.1 1882	2.8 1935	63.6 1939	36.1 1884	1.7 1905	67.1 1949	41.1 1935	6.7 1906	37.1 1910	44.4 1934	11.1 1935	34.5 1921	47.2 1884	17.4 1963	51.6 1889	47.2 1931	20.6 1914	159.5 1890
Uttar Pradesh (West)																		
Mukhna	20.1 1933	-3.4 1951	66.0 1960	21.7 1936	-3.9 1961	45.4 1961	24.4 1938	-1.6 1960	79.5 1962	28.9 1938	4.2 1939	39.4 1937	31.7 1936	8.5 1962	39.6 1937	33.2 1938	9.4 1962	109.0 1960
Tehri	25.6 1961	-1.2 1933	50.3 1937	30.0 1936	1.3 1961	33.0 1961	34.2 1938	1.9 1962	39.7 1963	39.3 1938	9.0 1939	24.6 1937	41.8 1932	12.2 1962	39.9 1936	42.3 1938	12.1 1937	49.5 1938
Dehra Dun	26.1 1946	1.1 1945	79.5 1945	29.4 1936	-1.1 1905	19.2 1949	37.2 1932	-2.2 1945	81.5 1926	40.6 1892	7.8 1944	39.1 1838	42.8 1944	12.8 1947	79.3 1940	43.9 1902	13.9 1906	188.0 1925
Mansiri	18.7 1937	-1.9 1937	43.3 1938	17.4 1937	-0.3 1937	9.7 1938	20.7 1937	1.7 1937	74.9 1933	25.5 1937	1.7 1960	52.1 1937	30.8 1937	8.1 1937	53.0 1963	30.2 1937	11.6 1937	80.5 1960
Roorkee	28.3 1890	-1.1 1935	101.6 1833	31.7 1936	-2.2 1905	111.0 1930	38.9 1945	2.8 1945	109.5 1935	43.3 1897	7.2 1905	38.3 1949	46.1 1884	14.4 1907	57.7 1910	46.7 1932	16.1 1900	148.8 1906
Najibabad	27.0 1961	0.6 1935	51.2 1962	32.8 1936	2.2 1938	48.3 1934	36.7 1933	2.2 1932	65.8 1962	40.9 1961	10.7 1960	17.8 1933	43.9 1962	15.6 1960	30.5 1936	45.2 1960	18.3 1934	89.5 1938
Meerut	27.2 1932	1.7 1951	54.0 1962	31.1 1936	2.8 1963	56.4 1949	37.8 1935	8.3 1951	54.6 1931	43.1 1938	12.2 1960	30.5 1946	45.6 1932	17.3 1960	19.5 1963	46.1 1932	19.4 1931	43.0 1963
Barcilly	29.4 1943	0.6 1905	61.0 1921	32.8 1884	0 1905	95.3 1915	40.0 1945	5.0 1945	79.3 1926	43.9 1932	11.1 1905	38.1 1909	46.7 1884	16.1 1898	40.1 1936	46.1 1948	19.4 1912	218.4 1908

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temperature	Rainfall	
Bihar plains (Contd.)																				
39.1 1962	20.8 1963	199.6 1926	37.5 1957	21.1 1912	264.4 1913	38.3 1961	19.4 1896	266.7 1925	38.7 1961	14.4 1914	214.0 1961	33.0 1943	7.2 1926	49.0 1912	36.6 1960	4.4 1908	25.1 1929	1881	1881	Darbhanga.
..	..	192.9 1957	..	..	220.0 1963	..	..	99.1 1960	..	..	65.1 1962	..	..	11.5 1963	..	..	14.0 1962	..	1951	Muzaffarpur.
40.2 1962	20.2 1960	120.9 1952	39.2 1960	23.7 1960	138.9 1952	36.6 1960	22.0 1963	179.3 1960	34.8 1963	16.4 1960	86.0 1961	32.2 1963	10.5 1960	44.7 1956	30.7 1963	5.1 1961	13.2 1956	1960	1951	Chapra.
37.4 1962	21.1 1921	204.2 1916	37.3 1957	21.7 1909	239.2 1918	37.2 1923	19.4 1890	318.5 1898	35.6 1957	10.0 1891	158.0 1929	32.8 1952	7.2 1883	114.8 1932	30.6 1953	3.3 1883	53.3 1913	1881	1881	Purnea.
41.7 1903	21.1 1911	177.8 1893	38.3 1903	21.7 1923	165.3 1914	37.8 1928	20.0 1890	366.0 1918	36.1 1932	15.0 1954	158.2 1894	33.9 1952	8.3 1934	62.7 1915	20.6 1951	5.0 1961	73.7 1929	1881	1881	Patna.
40.0 1952	21.1 1960	130.6 1957	36.1 1957	21.4 1959	129.0 1963	37.2 1951	22.2 1957	118.2 1963	35.6 1951	12.2 1962	89.3 1959	33.3 1952	7.8 1952	35.6 1956	30.6 1951	2.2 1961	19.6 1957 7.0 1962	1951	1951	Patna Aerodrome. Arrah
..	..	107.9 1955	..	..	127.0 1953	..	..	132.0 1960	..	..	59.0 1958	..	..	51.3 1956	..	..	..	..	1951	..
39.0 1962	22.8 1956	82.3 1956	38.5 1957	21.7 1957	123.7 1955	37.2 1956	21.7 1953	194.7 1962	36.3 1957	16.1 1954	169.9 1961	34.4 1952	11.1 1952	37.1 1956	30.6 1951	5.2 1961	8.4 1954	1951	1951	Bhagalpur.
37.8 1958	22.8 1956	145.0 1934	37.4 1957	22.8 1962	107.0 1961	37.8 1933	21.7 1956	189.6 1962	35.6 1957	13.3 1954	185.2 1961	33.4 1957	6.1 1934	37.3 1956	29.4 1963	2.2 1961	7.9 1936	1931	1931	Sabaur.
40.2 1962	10.5 1959	122.4 1951	36.7 1957	11.7 1959	168.8 1960	36.1 1951	11.3 1959	180.6 1960	35.6 1951	8.6 1959	205.8 1956	33.6 1957	8.3 1952	22.9 1956	31.7 1963	5.1 1961	4.8 1961	1951	1951	Jamui.
42.2 1962	21.5 1963	164.4 1959	35.0 1960	23.3 1953	107.2 1958	35.6 1951	22.1 1963	79.4 1962	35.6 1951	14.7 1957	42.2 1963	33.9 1951	9.4 1952	64.0 1956	31.7 1952	1.8 1961	12.2 1961	1951	1951	Dehri.
43.3 1926	16.7 1886	209.8 1886	38.9 1935	18.5 1962	258.6 1912	38.3 1928	20.6 1890	200.4 1946	37.2 1918	12.8 1954	116.6 1894	35.0 1896	8.2 1960	81.8 1924	31.1 1929	1.4 1961	49.0 1885	1881	1881	Gaya.
Uttar Pradesh (East)																				
47.7 1960	22.2 1954	235.8 1961	36.7 1952	22.2 1957	229.6 1963	36.1 1956	18.9 1950	187.6 1960	35.4 1963	12.8 1954	167.6 1960	35.3 1957	6.1 1952	5.3 1951	28.8 1960	4.4 1950	14.2 1950	1950	1950	Kheri.
44.4 1902	20.6 1900	186.2 1955	38.3 1903	21.1 1956	125.9 1938	38.3 1907	18.3 1912	236.2 1919	37.8 1907	12.2 1935	171.5 1945	33.5 1963	5.0 1952	78.0 1927	31.7 1896	1.7 1931	81.0 1956	1896	1896	Bahraich.
42.1 1957	22.2 1957	191.2 1962	40.0 1956	22.4 1961	150.8 1958	39.9 1961	20.8 1963	203.2 1956	38.7 1961	14.3 1957	159.6 1958	34.9 1962	7.2 1954	16.8 1963	30.0 1953	3.2 1961	10.3 1961	1954	1954	Nautanwa.
42.0 1962	22.8 1955	153.9 1953	36.8 1957	21.6 1953	209.1 1962	37.0 1963	16.7 1950	214.6 1960	37.8 1952	11.1 1954	241.6 1960	33.9 1951	6.1 1952	7.9 1951	31.8 1959	1.7 1961	15.7 1950	1950	1950	Hardoi.
41.7 1957	20.0 1949	215.4 1955	37.2 1939	16.7 1956	106.6 1938	37.8 1932	18.9 1950	174.2 1953	37.2 1951	12.2 1957	145.0 1933	33.9 1940	5.6 1934	32.5 1932	29.0 1963	2.8 1954	29.5 1950	1932	1932	Gonda.
45.6 1903	21.1 1963	111.7 1947	38.9 1911	21.2 1958	177.8 1881	39.4 1920	17.8 1899	250.2 1915	40.0 1896	11.1 1895	128.4 1958	35.0 1951	5.0 1920	48.3 1927	33.3 1896	1.7 1902	50.5 1885	1881	1881	Lucknow.
41.7 1954	22.2 1963	172.4 1960	36.9 1957	22.2 1956	121.9 1961	40.1 1958	18.8 1963	148.6 1957	37.2 1952	10.6 1957	191.4 1958	39.0 1963	3.3 1952	4.8 1956	29.4 1963	0.6 1961	12.0 1961	1952	1952	Lucknow (Amagasi).
40.3 1962	22.2 1963	147.2 1959	35.5 1959	22.3 1961	125.8 1962	35.9 1963	20.6 1963	66.0 1959	35.6 1959	12.9 1960	97.2 1959	33.6 1963	6.7 1960	10*2 1963	29.8 1961	2.9 1961	15.0 1961	1959	1959	Faizabad.
40.6 1926	18.9 1953	189.5 1937	37.2 1953	21.1 1944	284.5 1912	37.8 1928	17.8 1912	239.5 1930	36.7 1938	12.8 1895	218.7 1894	33.9 1952	6.7 1953	55.9 1956	29.4 1963	2.8 1913	28.7 1929	1881	1881	Gorakhpur.
45.0 1903	21.7 1948	167.6 1924	40.6 1903	21.7 1948	235.2 1915	40.0 1932	16.1 1896	233.9 1915	40.6 1896	11.1 1895	136.1 1894	36.1 1940	5.0 1948	59.2 1911	31.3 1959	-0.9 1961	40.6 1950	1891	1891	Kanpur.
41.3 1962	21.7 1963	37.6 1963	35.7 1960	22.8 1962	107.6 1962	36.8 1963	19.7 1963	58.4 1959	37.2 1963	14.7 1960	117.9 1961	35.6 1963	6.1 1962	2.5 1959	30.3 1959	-1.4 1961	10.2 1961	1959	1959	Kanpur (Aerodrome).
41.7 1962	21.9 1963	132.2 1963	35.7 1959	22.7 1962	99.4 1960	36.2 1960	20.5 1962	97.0 1962	36.0 1963	15.0 1960	237.4 1961	34.0 1963	8.8 1960	4.4 1963	30.0 1963	3.3 1961	21.8 1961	1959	1959	Sultanpur.
41.1 1962	21.1 1953	186.7 1955	36.7 1957	21.3 1962	130.6 1953	38.3 1951	18.9 1962	210.8 1956	37.8 1951	12.3 1960	81.0 1958	36.1 1951	6.2 1960	40.9 1956	31.1 1954	0.9 1961	12.5 1950	1949	1949	Azamgarh.
44.0 1962	21.7 1949	175.3 1932	39.4 1945	21.7 1953	191.8 1953	38.3 1932	19.2 1962	125.0 1939	38.9 1951	12.8 1952	111.0 1960	35.6 1944	6.1 1937	12.2 1936	31.1 1946	1.9 1961	39.4 1950	1932	1932	Fatehpur.
43.0 1962	23.7 1957	160.0 1963	37.0 1960	20.7 1957	149.1 1958	36.1 1959	19.3 1963	95.8 1962	36.1 1957	10.4 1957	137.2 1961	34.0 1961	5.8 1957	0 1958	29.9 1958	4.8 1961	8.2 1962	1957	1957	Ballia.
44.2 1962	20.6 1963	167.7 1951	37.8 1962	20.1 1963	164.4 1961	37.8 1951	18.0 1963	109.7 1954	38.3 1957	13.2 1957	109.6 1960	37.8 1951	7.3 1962	61.0 1956	31.1 1959	0.8 1961	34.8 1950	1949	1949	Banda.
45.6 1901	22.2 1963	229.4 1963	41.4 1963	21.1 1953	335.3 1953	39.4 1928	18.3 1912	266.2 1938	40.6 1896	11.7 1898	163.3 1894	35.6 1918	5.6 1941	96.0 1956	31.1 1946	-0.7 1961	54.6 1886	1881	1881	Allahabad (Bamhauri).
42.8 1962	22.1 1957	166.4 1955	36.4 1957	23.3 1961	137.6 1962	36.1 1960	21.3 1963	111.4 1959	35.6 1952	12.8 1954	36.4 1959	33.8 1963	6.1 1952	140.5 1956	30.0 1963	2.3 1962	11.9 1953	1952	1952	Varanasi (Bablapur).
45.0 1957	20.0 1919	283.3 1914	40.0 1903	22.2 1955	321.6 1940	38.3 1938	17.8 1912	349.5 1943	39.4 1896	11.7 1919	138.9 1900	35.6 1941	6.7 1926	74.9 1927	32.8 1956	2.2 1913	53.1 1929	1881	1881	Varanasi.
Uttar Pradesh (West)																				
28.2 1962	12.7 1961	105.2 1957	26.7 1957	14.2 1963	98.9 1963	26.1 1958	9.9 1963	121.3 1963	25.1 1961	2.7 1961	113.3 1956	22.0 1963	2.2 1961	33.5 1959	21.2 1960	-0.3 1962	77.7 1957	1956	1956	Mukhim.
40.0 1961	13.2 1957	73.7 1956	36.7 1960	20.0 1956	62.5 1958	36.3 1963	14.9 1963	115.6 1963	34.8 1960	8.6 1960	172.5 1956	31.1 1956	4.1 1961	25.2 1959	26.0 1958	-1.5 1961	39.8 1958	1956	1956	Tefri.
40.6 1931	18.3 1902	294.6 1890	37.2 1949	19.4 1932	132.2 1951	34.4 1938	14.4 1940	212.6 1924	36.1 1907	9.3 1961	137.4 1956	30.6 1952	2.8 1938	78.7 1911	27.2 1960	0 1954	108.5 1923	1881	1881	Dehra Dun.
24.2 1953	14.0 1960	148.4 1963	23.4 1960	12.8 1963	75.5 1960	24.1 1963	1.0 1960	55.4 1963	..	..	55.8 1963	16.1 1960	2.9 1963	28.5 1963	15.1 1963	-1.0 1963	82.0 1957	1957	1957	Mansiari.
45.0 1931	21.1 1935	228.9 1939	39.8 1960	20.6 1914	212.0 1963	38.3 1899	15.6 1944	266.7 1888	38.3 1899	8.9 1953	231.7 1956	33.9 1952	2.8 1934	58.2 1911	28.3 1889	-0.6 1902	58.2 1923	1881	1881	Roorkee.
41.7 1963	21.2 1963	188.0 1958	36.7 1956	20.9 1963	150.8 1963	36.7 1963	15.6 1962	178.8 1963	35.2 1963	10.0 1954	160.5 1956	33.9 1952	3.3 1956	11.4 1956	29.7 1960	-0.6 1956	44.2 1961	1952	1952	Najibabad.
42.8 1949	22.2 1963	146.1 1953	38.3 1954	21.7 1956	168.0 1958	37.8 1951	19													

Table with columns for months (January to June) and sub-rows for X, N, R. Rows include Uttar Pradesh (West), Punjab (India) (Including Delhi), Himachal Pradesh, and Rajasthan (West).

(R) Register not received.

Table with 23 columns (July to December, X, N, R, Temperature, Rain-fall) and rows for various sub-divisions and stations including Uttar Pradesh (West), Punjab (India), Himachal Pradesh, and Rajasthan (West).

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Rajasthan (West)—Contd.																		
Mahajan	26·5 1963	-5·1 1963	8·5 1962	33·0 1962	4·1 1963	0 ..	37·0 1962	.. ..	2·0 1962	45·0 1962	15·6 1963	4·0 1963	47·8 1962	19·0 1963	10·0 1963	47·5 1962	26·5 1963	12·0 1963
Churu	29·2 1958	-1·3 1963	15·0 1957	33·8 1960	2·0 1961	8·2 1961	39·0 1959	6·2 1960	13·8 1957	45·9 1958	11·5 1957	8·0 1963	46·6 1962	15·6 1960	14·8 1960	45·7 1962	21·1 1957	65·0 1961
Bikaner	31·1 1952	-2·2 1954	25·4 1958	37·2 1953	-2·2 1950	46·7 1906	42·8 1924	-0·6 1898	43·9 1911	47·2 1925	8·3 1953	31·0 1944	49·4 1914	13·7 1960	48·3 1883	48·9 1897	17·8 1888	110·7 1894
Nagaur	28·2 1961	1·1 1960	2·3 1961	34·6 1960	2·8 1961	11·0 1961	40·1 1959	8·8 1962	2·0 1962	43·3 1962	14·4 1963	5·5 1959	45·8 1959	16·6 1960	16·0 1959	44·6 1961	19·7 1960	33·3 1963
Phalodi	31·1 1946	-3·3 1942	41·1 1944	37·8 1953	0·6 1951	23·4 1948	42·8 1961	1·7 1945	12·9 1948	47·0 1958	12·2 1953	28·2 1962	47·2 1956	19·4 1944	33·8 1953	46·7 1944	20·6 1945	84·8 1945
Jaisalmer	30·7 1961	-4·4 1949	7·6 1957	37·8 1953	-2·2 1951	8·4 1961	41·6 1958	6·0 1960	8·9 1955	43·9 1949	10·6 1953	20·8 1961	47·8 1956	17·0 1960	16·0 1951	47·0 1963	20·5 1957	135·4 1961
Jodhpur	32·8 1932	-2·2 1905	40·1 1948	38·3 1953	0·6 1920	22·6 1939	41·8 1959	5·0 1908	20·6 1926	48·0 1958	9·4 1918	26·7 1919	48·9 1932	17·2 1909	38·1 1916	47·8 1901	19·4 1914	152·9 1917
Barmer	33·3 1949	-1·7 1935	59·9 1945	39·4 1943	4·0 1957	23·6 1939	43·3 1946	8·9 1945	24·6 1940	48·3 1958	12·2 1945	23·1 1933	48·9 1932	16·7 1931	36·6 1945	46·7 1946	18·9 1931	99·4 1961
Munabao . . . . .	.. ..	.. ..	0 ..	35·5 1961	4·0 1962	10·4 1961	40·0 1961	6·5 1962	3·0 1962	46·0 1961	14·0 1962	27·8 1961	45·0 1961	.. ..	0 ..	45·0 1962	.. ..	4·2 1962
Rajasthan (East)																		
Pilani	29·7 1959	-0·3 1963	6·2 1961	34·2 1960	1·8 1961	7·7 1961	39·2 1959	6·3 1960	15·2 1960	43·9 1962	11·9 1960	4·6 1960	46·1 1962	16·6 1960	33·0 1959	46·9 1963	21·6 1960	21·7 1960
Sikar	30·6 1949	-2·2 1955	19·1 1957	36·1 1953	-2·8 1951	16·5 1954	39·4 1949	4·4 1956	13·2 1960	44·4 1958	8·3 1955	5·3 1953	47·8 1956	15·6 1955	51·3 1959	43·9 1948	20·6 1954	54·3 1953
Alwar	28·3 1956	1·2 1961	34·0 1962	34·4 1959	4·4 1959	10·5 1962	38·4 1959	10·0 1956	29·0 1960	46·4 1958	14·7 1960	3·6 1959	50·6 1956	19·3 1958	23·1 1962	48·8 1957	23·3 1961	38·6 1957
Jaipur (Sanganer)	28·9 1952	0 1954	45·2 1957	36·1 1953	3·3 1956	12·5 1952	38·9 1953	7·8 1958	14·0 1957	44·9 1958	12·8 1955	11·7 1963	46·1 1956	16·6 1961	67·6 1959	45·6 1954	20·1 1957	50·6 1961
Dholpur	30·2 1958	1·2 1963	17·0 1961	34·7 1960	3·9 1960	19·3 1958	43·3 1955	8·9 1957	34·6 1960	45·8 1958	14·0 1960	8·1 1959	46·8 1962	19·8 1962	35·3 1959	47·1 1960	19·8 1963	76·2 1955
Ajmer	31·7 1902	-2·2 1935	46·6 1948	35·6 1953	-1·1 1905	33·0 1907	41·7 1892	2·2 1898	42·4 1932	44·6 1958	9·4 1886	38·1 1909	45·6 1912	15·6 1881	43·2 1925	45·0 1901	17·2 1944	119·4 1917
Tonk	29·1 1961	1·1 1960	4·6 1961	34·4 1960	1·8 1961	1·2 1961	37·6 1961	8·8 1962	7·8 1962	43·3 1962	13·1 1960	3·6 1963	45·4 1961	10·8 1960	7·8 1962	44·7 1961	22·6 1960	36·2 1960
Bhilwara	27·5 1963	3·0 1963	0 ..	36·0 1962	6·6 1962	0 ..	36·0 1963	9·9 1962	0 ..	42·0 1962	16·0 1962	16·8 1963	43·6 1963	20·2 1962	1·2 1962	42·2 1963	24·0 1963	12·1 1963
Kota	33·9 1912	1·7 1929	35·8 1915	38·3 1943	2·2 1929	50·8 1915	42·8 1945	7·2 1945	17·8 1944	47·5 1958	14·4 1905	25·9 1933	48·5 1962	18·9 1930	53·3 1917	47·8 1945	21·1 1941	132·1 1917
Kota (Aerodrome)	28·0 1963	5·0 1962	0·3 1963	34·5 1962	8·6 1962	0 ..	39·5 1963	12·4 1962	3·2 1963	44·4 1962	19·4 1963	3·6 1963	46·0 1963	23·1 1962	1·2 1963	45·2 1962	25·0 1963	7·5 1963
Erinpura (Jawai Dam)	31·6 1961	2·8 1960	36·8 1957	36·1 1955	2·3 1961	6·1 1961	40·0 1959	8·8 1962	16·8 1957	45·6 1958	14·4 1955	6·1 1959	45·0 1962	20·8 1961	20·5 1961	43·6 1958	20·5 1961	51·0 1963
Chambal (Rawat Bhatta-Dam)	30·3 1961	0 1956	15·6 1961	35·0 1960	0·5 1957	5·1 1956	40·1 1959	5·6 1956	29·7 1957	46·0 1958	14·4 1956	10·9 1962	46·1 1957	15·6 1957	22·9 1959	44·4 1958	16·3 1957	50·0 1959
Udaipur	30·6 1958	0·9 1962	49·5 1953	36·7 1953	1·0 1961	14·0 1948	38·9 1959	7·4 1957	26·4 1962	44·4 1958	10·6 1955	26·9 1953	43·9 1956	16·3 1960	9·9 1949	41·7 1958	18·8 1958	61·8 1963
Jhalawar	32·8 1932	-0·6 1935	47·7 1941	36·7 1953	1·7 1934	11·4 1942	41·7 1945	5·0 1943	14·2 1957	46·3 1958	14·4 1955	34·8 1933	46·7 1932	18·9 1956	27·2 1936	46·1 1945	21·1 1950	252·0 1945
Madhya Pradesh (West)																		
Gwalior	31·7 1943	-1·1 1954	40·1 1957	36·7 1949	0·6 1950	20·6 1954	41·7 1945	7·2 1945	17·2 1960	49·5 1960	12·8 1953	15·2 1943	48·3 1947	20·3 1960	41·9 1953	47·2 1945	21·1 1944	162·6 1952
Sheopor	31·7 1952	0·6 1954	27·8 1960	37·2 1953	1·9 1957	20·8 1954	41·3 1958	7·2 1956	29·7 1956	45·9 1958	13·9 1955	7·6 1952	47·8 1954	18·8 1960	41·0 1959	46·7 1954	22·2 1955	89·1 1955
Shivpuri	29·0 1961	0 1962	19·8 1961	32·9 1963	1·7 1961	0·5 1961	36·9 1961	6·3 1962	2·0 1962	42·6 1961	12·0 1963	6·8 1963	44·2 1962	16·2 1963	3·3 1961	42·9 1962	22·2 1963	11·2 1963
Nowgong	32·2 1946	-1·7 1935	64·0 1962	36·7 1934	-0·6 1905	48·0 1946	41·7 1931	5·0 1945	25·9 1913	45·0 1948	11·7 1905	40·6 1909	47·2 1947	13·9 1932	31·0 1913	47·2 1923	18·4 1957	462·8 1897
Guna	31·7 1946	-2·2 1934	33·2 1959	36·1 1953	-1·1 1950	40·6 1942	41·1 1945	5·0 1945	59·9 1950	43·4 1958	11·1 1940	17·7 1959	46·1 1954	16·7 1960	55·2 1959	46·1 1945	20·0 1944	191·5 1945
Nimach	32·8 1898	-1·1 1905	68·3 1891	36·7 1907	-0·6 1886	47·7 1915	41·7 1892	4·4 1905	50·0 1923	44·6 1958	8·9 1905	31·5 1888	46·7 1912	13·9 1920	49·3 1883	46·1 1897	15·6 1885	172·7 1933
Rajgarh	32·2 1961	1·3 1962	10·7 1956	36·0 1963	2·2 1957	2·0 1956	40·6 1959	8·5 1962	19·3 1957	46·3 1958	14·4 1956	1·8 1961	46·6 1958	16·7 1960	27·4 1956	45·2 1958	21·0 1963	61·0 1958
Sagar	31·7 1912	1·7 1934	84·1 1887	35·0 1953	1·1 1929	43·2 1951	41·1 1892	7·2 1898	60·9 1957	43·9 1896	10·6 1926	23·9 1937	45·6 1914	16·9 1959	58·2 1903	45·6 1897	17·0 1963	235·5 1890
Ratlam	33·0 1961	3·0 1962	18·0 1953	37·8 1953	5·4 1961	8·1 1956	41·1 1952	9·4 1957	19·8 1954	45·2 1958	15·0 1955	10·2 1957	43·9 1957	20·1 1960	21·6 1956	42·2 1953	19·4 1961	98·8 1951
Bhopal (Bairagarh)	32·2 1934	0·6 1935	34·3 1948	36·1 1953	1·7 1950	22·4 1962	40·0 1945	7·8 1945	35·1 1936	44·2 1958	12·2 1935	13·5 1937	45·6 1947	19·4 1933	72·6 1956	43·9 1945	19·5 1957	120·9 1945
Ujjain	32·2 1961	0 1962	13·6 1963	33·8 1963	5·0 1961	5·6 1963	39·0 1961	11·0 1963	9·0 1963	42·8 1961	14·6 1961	1·4 1962	43·2 1962	20·0 1963	7·0 1963	40·2 1963	21·0 1961	27·0 1963
Narsinghpur	28·0 1963	1·2 1963	3·0 1963	34·4 1962	4·8 1963	29·5 1962	38·8 1962	7·8 1962	3·1 1962	43·0 1962	16·6 1962	15·8 1963	45·0 1963	20·4 1963	6·6 1962	43·4 1963	21·6 1963	60·6 1963
Hoshangabad	32·5 1961	3·3 1935	40·1 1919	37·8 1953	6·1 1950	36·6 1917	41·1 1953	10·6 1935	41·9 1957	45·2 1958	16·1 1951	48·3 1890	46·1 1954	19·6 1963	35·8 1893	45·6 1953	21·1 1946	178·8 1895
Indore	32·2 1938	-1·1 1935	80·5 1920	36·7 1953	-2·8 1888	32·0 1888	41·1 1892	5·0 1898	19·3 1944	44·6 1958	7·8 1905	51·1 1895	45·6 1916	16·7 1881	99·1 1886	45·0 1897	18·9 1958	127·0 1895
Rajpur (Jhabua)	32·8 1961	0 1962	11·2 1963	37·2 1956	3·7 1957	18·0 1961	40·9 1958	9·0 1960	6·2 1962	44·0 1958	16·0 1960	13·1 1958	44·8 1960	18·8 1960	26·7 1956	41·6 1958	21·0 1960	73·0 1960
Chhindwara	30·0 1950	3·2 1960	75·4 1960	35·6 1953	2·8 1950	37·9 1950	38·3 1953	8·9 1957	14·7 1958	42·5 1958	15·4 1960	15·2 1957	43·8 1958	19·8 1959	47·7 1956	43·0 1958	18·3 1949	73·9 1956

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temperature	Rainfall	
Rajasthan (West) (Contd.)																				
43.5 1962	..	60.7 1962	41.8 1962	24.5 1963	80.3 1963	40.7 1961	19.3 1963	9.0 1961	40.0 1961	11.7 1961	4.0 1961	34.0 1962	..	3.0 1961	32.5 1963	—0.6 1963	2.0 1962	1961	1961	Mahajan.
41.8 1963	22.4 1962	76.0 1957	41.4 1957	22.5 1962	57.4 1960	39.4 1960	16.9 1962	72.3 1963	38.7 1960	10.6 1957	15.0 1961	35.1 1957	1.4 1962	13.0 1959	32.8 1963	—0.8 1960	8.2 1960	1957	1957	Churu.
47.8 1963	20.6 1931	134.1 1920	43.3 1920	21.1 1889	142.0 1909	43.9 1915	18.1 1962	165.6 1945	42.2 1951	7.8 1949	95.8 1917	37.2 1943	0.6 1937	41.9 1951	33.3 1963	—2.8 1950	30.0 1892	1881	1881	Bikaner.
41.7 1960	22.7 1959	77.1 1962	39.6 1960	21.9 1963	27.2 1959	41.6 1960	18.7 1962	21.0 1962	39.9 1960	12.4 1961	6.3 1959	34.1 1960	4.9 1962	2.1 1961	31.4 1959	1.6 1959	36.2 1962	1959	1959	Nagaur.
45.6 1963	21.3 1962	105.2 1948	43.1 1957	21.7 1956	72.4 1953	41.5 1960	18.9 1962	63.5 1954	42.2 1941	8.9 1949	24.1 1956	36.7 1943	5.0 1946	13.5 1957	32.2 1963	0.6 1945	12.6 1961	1941	1941	Phalodi.
45.0 1963	21.7 1955	33.0 1954	43.3 1958	20.6 1962	104.4 1955	43.3 1949	19.3 1962	36.0 1958	42.2 1951	8.3 1949	9.4 1958	37.8 1950	4.3 1962	22.1 1957	33.6 1963	1.1 1955	6.3 1957	1948	1948	Jaisalmer.
45.6 1961	19.4 1926	121.1 1943	42.9 1957	20.6 1957	134.4 1927	42.8 1915	17.8 1998	215.9 1924	42.2 1920	10.0 1949	142.0 1917	37.2 1957	5.6 1938	26.9 1893	33.9 1953	—0.6 1945	22.9 1937	1891	1891	Jodhpur.
44.4 1939	19.4 1936	121.5 1944	43.3 1957	20.0 1941	255.5 1944	42.8 1951	16.7 1935	61.6 1961	42.8 1951	13.9 1933	13.0 1956	38.2 1957	6.7 1946	27.6 1958	35.0 1963	2.3 1945	14.0 1942	1931	1931	Barmer.
..	..	0	..	..	..	41.0 1962	20.5 1962	..	39.5 1962	..	0	..	..	..	31.0 1961	0	0.3 1962	1961	1961	Munabao.
Rajasthan (East)																				
43.3 1963	14.3 1959	139.6 1962	40.4 1960	23.3 1963	76.4 1959	38.5 1960	15.5 1962	67.1 1962	38.3 1961	11.9 1960	19.2 1959	34.1 1963	2.1 1962	17.4 1959	31.7 1963	—0.1 1962	8.6 1960	1959	1959	Pilani.
44.4 1947	20.6 1962	33.1 1960	40.0 1957	21.1 1955	39.7 1947	39.4 1954	13.1 1963	70.0 1962	40.6 1951	4.5 1958	19.5 1955	34.2 1957	0	25.1 1963	31.3 1963	—1.7 1954	20.3 1946	1946	1946	Sikar.
43.6 1963	22.3 1958	114.0 1962	39.4 1957	21.7 1957	114.4 1962	37.8 1957	16.9 1962	73.0 1957	40.6 1957	12.0 1960	11.7 1956	35.0 1957	6.8 1958	24.4 1959	29.5 1959	1.4 1961	36.4 1962	1956	1956	Alwar.
41.1 1957	21.7 1958	55.8 1958	38.3 1955	18.9 1953	188.4 1959	38.0 1960	16.3 1962	77.2 1956	37.8 1952	11.7 1955	59.4 1956	34.1 1957	5.8 1960	17.4 1958	31.3 1963	1.4 1962	6.4 1960	1952	1952	Jaipur (Sanganer).
41.4 1963	13.3 1956	192.6 1957	43.0 1957	17.7 1960	61.2 1958	37.4 1960	17.9 1962	101.4 1963	33.2 1963	11.1 1957	105.4 1955	36.3 1963	0.1 1961	7.5 1961	31.3 1957	0.7 1961	8.6 1960	1955	1955	Dholpur.
41.4 1961	20.0 1931	35.6 1962	41.0 1963	20.6 1955	64.6 1928	40.6 1915	16.1 1950	136.2 1924	38.9 1951	7.4 1889	119.4 1956	35.0 1901	2.8 1926	42.8 1958	31.6 1963	0.6 1936	56.6 1913	1881	1881	Ajmer.
41.9 1963	22.8 1961	130.6 1961	38.1 1962	22.4 1962	63.2 1961	38.9 1960	17.5 1962	95.9 1963	38.5 1960	11.1 1960	4.2 1961	33.9 1960	3.4 1960	31.1 1963	30.5 1960	1.7 1961	21.0 1962	1960	1960	Tonk.
40.0 1963	22.8 1963	41.3 1962	36.5 1962	22.5 1962	120.2 1953	35.0 1963	17.2 1962	26.4 1962	36.2 1963	13.5 1962	6.2 1963	35.4 1963	6.5 1962	6.4 1963	33.3 1963	4.0 1962	3.7 1962	1962	1962	Bhilwara.
47.2 1963	19.4 1962	219.2 1945	41.1 1911	18.2 1962	72.2 1955	40.6 1951	19.2 1962	185.4 1926	41.1 1930	13.0 1962	98.0 1930	37.2 1901	7.8 1962	54.1 1927	33.9 1941	3.9 1926	30.0 1927	1901	1901	Kota.
41.5 1963	22.6 1963	139.2 1962	38.0 1962	22.7 1962	121.1 1963	36.9 1963	20.6 1962	36.5 1963	37.8 1963	15.0 1962	4.5 1963	35.5 1963	8.9 1962	40.9 1963	33.2 1963	7.3 1963	3.4 1962	1962	1962	Kota (Aerodrome).
41.1 1963	21.3 1962	228.4 1962	38.3 1957	22.3 1957	180.9 1957	38.9 1960	19.9 1963	152.9 1955	39.9 1960	12.5 1961	26.6 1963	35.3 1963	4.7 1960	16.7 1963	33.6 1963	3.6 1961	6.2 1958	1955	1955	Erinpura (Jawai Dam).
46.1 1962	20.6 1956	191.5 1955	37.2 1955	15.6 1957	109.7 1956	40.6 1956	14.4 1957	207.4 1961	37.8 1963	8.3 1955	45.5 1955	37.2 1957	3.3 1958	40.6 1963	32.6 1963	—1.1 1955	3.0 1962	1955	1955	Chambal (Rawat Bhatta Dam).
37.8 1948	21.1 1954	105.9 1950	35.5 1957	18.9 1950	105.7 1957	37.8 1951	15.6 1950	183.9 1950	37.2 1951	9.9 1957	48.6 1963	35.0 1951	4.3 1960	38.1 1948	32.2 1963	0.6 1950	5.3 1956	1947	1947	Udaipur.
42.2 1931	19.7 1958	246.6 1947	41.7 1960	18.3 1955	184.7 1942	38.9 1951	17.0 1957	147.0 1961	40.0 1951	10.6 1934	76.2 1956	35.6 1941	5.6 1956	66.0 1933	33.3 1941	2.2 1945	44.2 1947	1931	1931	Jhalawar.
Madhya Pradesh (West)																				
43.9 1948	22.9 1942	149.9 1947	38.3 1954	21.1 1955	108.5 1954	37.2 1951	18.3 1942	208.3 1963	39.4 1951	8.9 1952	150.6 1955	35.6 1941	3.9 1946	11.7 1946	31.1 1959	—0.4 1961	31.7 1952	1941	1941	Gwalior.
42.2 1951	22.2 1953	187.2 1957	38.9 1955	21.1 1953	121.4 1961	38.3 1951	17.4 1957	69.1 1954	40.6 1951	10.2 1957	100.8 1956	37.3 1957	4.6 1962	19.1 1951	32.2 1963	0	10.2 1956	1951	1951	Shepur.
40.0 1963	21.0 1963	75.6 1962	34.2 1962	21.1 1961	146.2 1961	33.4 1963	16.8 1962	65.6 1961	35.8 1963	11.0 1962	34.0 1961	33.8 1963	2.6 1962	24.4 1963	30.7 1963	—0.3 1961	5.8 1961	1961	1961	Shivpuri.
45.6 1931	20.8 1958	232.7 1902	38.3 1945	20.6 1957	255.4 1961	39.4 1929	17.0 1962	169.2 1906	39.4 1930	8.4 1957	127.0 1926	35.6 1929	3.8 1962	75.2 1910	32.8 1929	—1.7 1961	84.6 1886	1881	1881	Nowgong.
41.7 1931	19.1 1960	293.4 1958	36.7 1955	19.4 1952	181.6 1934	38.1 1960	16.7 1942	298.5 1947	38.3 1951	8.3 1957	63.5 1956	35.0 1963	2.8 1940	64.5 1946	32.5 1962	—0.6 1950	35.6 1946	1931	1931	Guna.
42.2 1901	14.4 1910	152.4 1943	37.8 1899	18.3 1913	136.0 1957	38.9 1951	17.2 1902	177.5 1947	39.4 1919	10.6 1890	102.1 1955	35.6 1901	5.0 1938	51.6 1934	32.1 1962	0.6 1929	25.4 1962	1881	1881	Nimach.
41.2 1957	19.7 1958	153.7 1956	35.0 1962	20.6 1956	300.2 1960	35.6 1955	15.0 1956	116.8 1955	37.0 1957	9.4 1955	52.8 1961	35.4 1963	4.4 1956	60.3 1963	32.8 1963	0	57.1 1956	1955	1955	Rajgarh.
41.1 1931	16.0 1963	284.5 1904	35.6 1899	18.7 1963	274.3 1908	38.3 1881	16.7 1926	173.0 1962	37.8 1899	11.7 1890	198.2 1958	34.4 1909	6.1 1926	105.2 1902	33.6 1963	2.1 1961	73.9 1886	1881	1881	Sagar.
37.6 1958	20.0 1951	133.2 1962	38.7 1959	20.0 1956	153.4 1957	37.8 1951	16.1 1954	266.4 1962	38.3 1951	12.8 1952	162.3 1955	34.8 1963	9.4 1956	41.0 1963	33.0 1962	6.1 1955	7.2 1963	1948	1948	Ratlam.
40.6 1931	19.0 1958	218.2 1939	35.0 1932	19.4 1956	188.5 1944	36.1 1951	17.2 1951	233.2 1947	37.8 1951	11.7 1943	123.7 1955	33.5 1962	6.1 1941	68.3 1936	32.8 1941	3.3 1936	31.7 1935	1931	1931	Bhopal (Bairagarh).
38.8 1962	21.6 1963	90.0 1963	34.0 1961	21.4 1963	87.8 1962	35.2 1963	18.0 1963	239.0 1961	34.8 1963	11.0 1962	30.2 1961	34.5 1963	8.0 1962	23.0 1963	32.0 1963	4.0 1963	9.6 1963	1961	1961	Ujjain.
36.4 1963	19.9 1963	66.2 1962	34.0 1963	21.8 1962	65.4 1963	34.2 1963	20.0 1963	115.0 1963	35.0 1963	11.4 1962	16.0 1962	35.0 1963	5.2 1962	2.1 1963	32.4 1963	2.1 1963	30.0 1962	1962	1962	Narsinghpur.
41.4 1960	18.9 1951	238.8 1898	35.6 1950	19.4 1943	294.1 1919	40.4 1959	17.8 1942	207.0 1950	37.2 1951	12.2 1952	98.3 1943	35.0 1951	3.9 1952	36.4 1912	32.3 1959	4.4 1938	109.7 1928	1931	1881	Hoshangabad.
38.3 1931	18.9 1910	293.4 1913	35.0 1899	18.9 1952	209.8 1956	37.2 1899	16.6 1963	169.8 1962	37.8 1899	8.9 1890	78.5 1938	35.0 1925	5.6 1936	69.0 1958	32.8 1896	1.1 1936	46.7 1962	1881	1881	Indore.
39.4 1962	20.4 1962	186.8 1958	33.7 1958	20.6 1956</																

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Madhya Pradesh (West)(contd)																		
Seoni	32.8 1882	2.0 1937	49.5 1943	37.2 1896	3.3 1911	70.1 1890	40.6 1899	6.1 1910	42.2 1936	43.9 1942	11.7 1905	41.9 1937	44.4 1954	15.0 1917	74.2 1918	45.0 1942	17.8 1928	297.4 1907
Betul	31.3 1961	2.8 1953	10.9 1957	37.2 1953	1.1 1950	16.4 1963	38.9 1953	8.2 1960	34.5 1957	42.6 1958	15.0 1955	23.1 1957	43.3 1954	19.1 1963	23.1 1957	42.2 1953	15.0 1949	73.7 1951
Khandwa	35.6 1932	1.7 1946	49.5 1920	38.9 1953	0.6 1929	48.3 1928	43.3 1892	6.1 1908	27.4 1881	46.7 1958	11.1 1905	26.2 1891	47.2 1917	17.2 1881	71.1 1956	46.1 1923	18.7 1957	153.2 1940
Madhya Pradesh (East)																		
Satea	32.2 1946	0.6 1933	31.3 1955	35.0 1956	1.1 1905	49.3 1936	41.1 1945	4.4 1949	42.9 1893	45.0 1896	12.2 1918	52.8 1946	46.7 1947	18.3 1933	33.5 1914	47.8 1954	19.4 1929	562.6 1882
Sidhi	32.8 1959	1.0 1962	47.3 1961	33.4 1960	1.4 1959	34.4 1962	39.7 1959	6.1 1960	30.2 1963	48.8 1959	13.1 1959	9.6 1963	46.6 1959	17.0 1960	5.6 1959	44.7 1962	22.5 1963	41.0 1959
Umaria	34.4 1943	0 1933	61.2 1939	36.7 1954	0.6 1950	55.6 1950	40.0 1955	5.0 1945	43.4 1941	44.4 1942	12.8 1951	31.5 1937	45.6 1954	17.5 1960	27.7 1957	45.6 1945	26.0 1948	209.8 1946
Jabalpur	32.8 1946	1.1 1946	63.7 1919	37.2 1953	0 1905	55.6 1898	41.1 1882	3.3 1898	39.6 1927	45.0 1942	10.6 1905	50.3 1935	46.7 1954	17.2 1937	73.7 1885	46.1 1899	19.4 1922	185.2 1883
Ambikapur	29.3 1958	1.1 1954	20.1 1954	33.3 1954	3.9 1956	62.4 1961	38.3 1955	8.2 1957	27.6 1963	41.9 1961	12.8 1955	21.3 1951	43.3 1956	18.8 1960	51.1 1956	43.3 1955	19.9 1963	113.8 1961
Pendra	30.1 1958	3.3 1937	45.0 1933	34.1 1953	1.7 1929	42.9 1917	39.4 1955	8.9 1906	70.9 1956	42.8 1942	12.4 1961	67.8 1926	43.9 1928	17.8 1933	55.9 1925	45.9 1942	16.7 1915	242.1 1936
Mandla	30.6 1954	0.6 1954	38.3 1953	35.6 1953	2.7 1957	42.2 1961	39.4 1955	7.0 1962	29.7 1951	43.2 1958	11.1 1956	19.3 1951	45.0 1954	16.8 1957	20.1 1956	44.4 1958	19.5 1963	112.0 1961
Champa	32.2 1950	6.2 1963	64.0 1954	35.7 1953	6.3 1950	43.6 1961	41.7 1955	13.2 1957	38.1 1951	45.0 1952	18.1 1961	16.4 1962	47.2 1948	19.9 1963	37.6 1956	47.2 1953	21.5 1961	130.8 1961
Raigarh	32.8 1955	6.8 1963	39.4 1953	37.2 1955	9.4 1956	26.6 1958	42.2 1955	13.0 1960	61.0 1951	45.0 1961	16.8 1963	29.2 1951	46.7 1956	20.2 1963	40.0 1956	47.2 1953	19.5 1963	190.8 1961
Raipur	35.0 1955	5.0 1908	55.4 1921	37.8 1899	5.0 1893	57.4 1917	43.3 1892	8.3 1898	55.9 1906	46.1 1942	15.0 1905	38.3 1909	47.2 1935	14.4 1901	80.3 1903	47.2 1931	16.1 1884	292.7 1919
Kanker	32.8 1931	3.9 1946	53.3 1943	35.0 1953	3.9 1934	32.8 1950	40.0 1942	10.0 1948	48.3 1957	43.3 1912	15.6 1914	44.2 1951	44.4 1953	17.8 1945	45.7 1932	46.1 1931	17.8 1936	215.3 1938
Jagdalpur	33.1 1957	4.4 1913	40.6 1926	36.7 1953	5.0 1943	120.1 1919	40.6 1953	9.3 1946	45.7 1927	43.3 1941	13.9 1943	51.4 1939	46.1 1912	17.2 1917	61.1 1924	44.1 1953	17.2 1913	131.1 1949
Gujarat Region																		
Deesa	35.6 1932	2.2 1935	28.2 1940	40.6 1953	0.6 1929	21.5 1941	46.1 1892	5.6 1905	24.1 1911	46.3 1958	10.0 1905	24.1 1923	50.0 1912	17.8 1920	63.6 1920	48.3 1897	20.1 1961	102.4 1956
Radhanpur	33.6 1961	1.0 1962	0.3 1961	36.4 1960	5.6 1961	0.7 1961	42.3 1959	6.3 1966	0.2 1962	43.5 1961	15.1 1962	1.4 1962	45.3 1959	19.2 1960	0 ..	42.9 1962	19.5 1960	30.2 1961
Idar	33.0 1961	4.8 1962	5.8 1957	36.2 1960	9.5 1960	2.0 1961	41.9 1959	9.4 1960	3.6 1962	46.6 1958	15.7 1958	21.1 1959	44.9 1962	20.7 1957	3.2 1962	43.3 1958	20.6 1958	96.2 1963
Ahmedabad	36.1 1912	3.3 1954	30.7 1943	40.6 1953	2.2 1920	26.4 1917	43.9 1908	9.4 1908	12.2 1910	46.2 1958	12.8 1955	21.6 1947	47.8 1916	19.4 1920	46.2 1917	47.2 1897	19.4 1920	130.8 1937
Dohad	33.9 1943	0 1935	11.9 1952	39.4 1953	2.2 1950	29.6 1942	41.7 1945	9.4 1945	22.3 1944	45.4 1958	15.0 1935	15.2 1946	45.0 1932	20.0 1933	122.7 1938	44.4 1945	19.6 1961	90.4 1940
Vallabh Vidyanagar*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Baroda Aerodrome	35.6 1952	2.8 1962	14.0 1953	40.6 1953	3.9 1950	6.0 1961	42.4 1959	10.9 1957	10.0 1962	45.2 1958	14.4 1955	0.6 1959	46.1 1955	19.9 1960	40.9 1956	43.3 1953	21.2 1957	92.3 1961
Baroda	36.2 1961	1.1 1935	15.2 1953	41.7 1953	1.7 1950	31.7 1943	43.3 1959	6.7 1936	10.4 1954	45.9 1958	11.7 1955	2.6 1962	46.7 1955	18.9 1939	71.4 1947	45.6 1945	21.5 1957	129.8 1958
Broach	36.9 1961	4.0 1962	7.9 1953	42.8 1953	5.8 1961	11.3 1961	44.2 1959	11.5 1957	14.0 1954	45.6 1956	16.1 1955	2.0 1962	47.3 1955	21.2 1957	30.5 1956	44.4 1953	22.3 1957	199.2 1954
Surat	38.3 1952	4.4 1929	45.7 1920	41.7 1953	5.6 1929	38.1 1898	43.9 1945	10.6 1893	8.1 1959	45.6 1952	15.0 1903	97.8 1947	45.6 1956	19.4 1888	48.8 1917	45.6 1901	20.2 1962	260.1 1922
Saurashtra and Kutch																		
Bhutamia Bhimasar**	33.6 1961	6.0 1960	0 ..	33.5 1961	9.0 1961	6.5 1961	39.6 1961	10.5 1960	0 ..	43.3 1961	18.6 1960	0 ..	44.6 1961	21.8 1960	8.0 1961	43.9 1961	22.0 1961	31.0 1960
Naliya	33.4 1963	1.2 1962	5.5 1961	36.2 1963	4.4 1961	21.4 1961	42.2 1959	8.0 1960	0 ..	42.0 1961	13.5 1961	0 ..	44.6 1959	16.4 1960	0 ..	38.2 1959	23.0 1961	65.8 1961
Bhuj (Rudramata)	32.4 1958	2.6 1962	2.7 1959	37.2 1955	4.3 1957	16.4 1961	41.3 1959	9.3 1960	4.3 1958	44.8 1958	13.9 1955	0 ..	45.6 1955	18.1 1960	29.2 1955	42.0 1958	22.6 1961	39.6 1961
Kandla Aerodrome	31.7 1963	2.9 1962	0 ..	34.7 1962	10.4 1962	0 ..	39.5 1961	10.9 1962	0 ..	42.9 1962	17.5 1962	1.0 1962	44.3 1963	20.7 1962	1.1 1961	40.1 1962	21.1 1963	50.3 1961
New Kandla	31.7 1958	8.3 1962	5.1 1958	33.9 1956	7.7 1957	16.2 1961	40.4 1959	13.7 1960	3.8 1955	42.2 1956	18.3 1955	0.2 1963	43.3 1956	22.1 1957	3.1 1957	38.3 1963	22.8 1961	105.9 1956
Mandvi	31.3 1963	5.6 1962	4.1 1959	35.6 1955	8.9 1957	0 ..	38.1 1959	11.3 1961	3.0 1960	41.1 1958	15.0 1956	0 ..	42.6 1959	21.1 1957	0 ..	35.0 1955	22.8 1961	55.0 1961
Surendranagar	33.7 1958	6.7 1962	2.0 1957	38.3 1955	7.4 1957	8.9 1961	42.8 1959	12.9 1957	0 ..	45.1 1958	13.9 1955	24.3 1959	46.7 1955	22.8 1956	11.9 1957	44.9 1958	22.8 1962	61.2 1955
Okha	28.4 1963	18.0 1963	0 ..	29.7 1963	9.3 1963	0 ..	34.0 1963	20.4 1963	0 ..	30.8 1963	23.2 1963	0 ..	32.7 1963	26.0 1963	0 ..	33.4 1963	26.6 1963	10.8 1963
Jamnagar (Aerodrome)	33.9 1933	1.7 1935	19.8 1929	37.2 1926	2.2 1929	29.5 1906	40.0 1946	8.3 1905	38.6 1904	42.8 1901	12.8 1905	19.3 1915	44.4 1903	16.7 1918	92.7 1933	43.9 1927	17.2 1917	337.8 1920
Dwarka	34.0 1957	6.1 1929	20.3 1919	35.6 1920	8.3 1901	64.0 1906	38.3 1958	7.8 1905	42.8 1911	41.1 1932	17.2 1903	24.4 1915	42.7 1959	20.0 1909	7.6 1933	37.8 1951	22.0 1961	230.9 1956
Rajkot	26.1 1932	0.6 1935	13.2 1935	40.0 1953	1.1 1893	21.3 1888	43.9 1892	6.1 1905	21.6 1911	44.4 1949	10.0 1903	29.2 1947	47.8 1919	16.1 1907	117.3 1917	45.0 1897	20.0 1913	218.9 1893
Bhaunagar Aerodrome	33.9 1952	6.1 1954	7.6 1953	37.8 1953	6.7 1957	30.0 1961	41.8 1961	11.9 1962	9.9 1954	43.3 1958	14.4 1955	0 ..	45.0 1955	22.2 1963	6.2 1960	43.3 1953	20.0 1954	61.7 1957
Porbander Aerodrome	35.0 1961	4.7 1962	7.2 1961	36.1 1962	8.7 1961	12.0 1961	40.6 1961	12.7 1962	0 ..	41.8 1961	18.3 1962	0 ..	39.0 1963	20.5 1961	0 ..	34.4 1962	23.6 1961	90.0 1963
Keshol	35.6 1961	2.6 ..	0 ..	38.0 1960	5.2 1961	10.0 1961	42.1 1959	11.5 1960	0 ..	44.0 1961	15.8 1960	0.2 1959	45.1 1959	19.9 1960	0.8 1959	37.7 1959	22.3 1959	61.0 1963

*Observatory started from 27-7-1963.

**Data for 1963 not available.

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temperature	Rain-fall	
37.8 1931	17.8 1941	276.1 1929	35.6 1899	17.2 1917	281.9 1913	35.0 1944	16.1 1912	203.0 1917	36.1 1899	10.6 1910	124.5 1916	33.9 1899	5.0 1912	116.8 1946	31.7 1899	3.3 1936	103.4 1962	1881	1881	Madhya Pradesh (West) <i>(contd.)</i> Seoni.
35.6 1959	19.3 1959	145.2 1960	32.2 1950	18.9 1951	127.8 1953	32.8 1960	16.9 1960	265.0 1961	33.9 1952	8.3 1952	92.7 1951	32.2 1948	5.6 1956	90.7 1956	31.7 1960	3.3 1955	40.0 1962	1948	1948	Betul.
40.0 1960	18.9 1959	240.5 1927	39.4 1951	17.4 1960	203.2 1957	40.6 1899	17.3 1912	218.6 1959	40.6 1899	9.4 1890	146.6 1924	37.2 1951	6.1 1919	84.8 1936	31.5 1960	2.8 1929	95.8 1386	1881	1881	Khandwa.
45.0 1931	17.8 1929	209.5 1894	36.7 1911	21.1 1951	299.7 1915	37.2 1932	16.7 1912	172.1 1951	38.3 1896	10.0 1890	152.1 1892	35.5 1957	5.0 1941	84.6 1956	32.9 1963	0.4 1961	47.7 1929	1881	1881	Madhya Pradesh (East) Satna.
41.1 1963	21.1 1959	106.0 1961	36.6 1963	18.9 1959	131.0 1961	33.8 1963	19.8 1962	65.4 1961	36.2 1960	12.2 1960	32.4 1959	33.9 1963	5.0 1960	8.4 1963	31.2 1960	2.5 1959	18.5 1961	1959	1959	Sidhi.
39.6 1958	20.4 1951	179.8 1915	35.0 1915	20.0 1951	302.0 1953	35.6 1958	17.8 1944	126.5 1933	35.2 1957	9.4 1933	85.5 1961	35.0 1963	3.9 1937	79.5 1916	31.7 1911	0.5 1961	41.1 1940	1932	1932	Umaria.
41.7 1902	20.6 1930	142.9 1915	35.0 1914	18.4 1929	250.5 1923	35.6 1913	16.7 1899	251.7 1926	36.7 1911	7.8 1884	121.9 1916	31.0 1963	3.9 1839	93.5 1956	32.8 1941	0.6 1902	68.1 1885	1881	1881	Jabalpur.
37.1 1958	20.0 1963	144.2 1962	34.1 1961	29.7 1958	147.6 1960	34.9 1959	17.2 1962	36.0 1961	35.3 1957	9.4 1951	205.0 1961	30.0 1963	4.1 1952	6.6 1956	29.0 1962	1.7 1955	10.4 1962	1950	1950	Ambikapur.
37.2 1954	18.3 1942	166.6 1953	32.8 1923	18.3 1910	262.1 1953	32.8 1938	16.7 1912	150.4 1926	33.9 1920	11.7 1933	91.4 1945	31.7 1969	6.1 1926	58.4 1924	30.0 1911	3.9 1936	37.1 1906	1906	1906	Pendra.
39.9 1958	20.0 1963	210.4 1959	31.6 1953	17.3 1957	137.9 1957	33.9 1951	17.4 1957	149.1 1955	35.0 1951	7.8 1952	121.4 1951	33.2 1957	3.3 1950	65.8 1956	31.2 1960	1.1 1955	166.4 1962	1950	1950	Mandala.
39.4 1954	20.4 1963	142.0 1952	35.1 1957	22.2 1963	260.1 1963	35.0 1954	20.3 1963	103.9 1961	36.2 1957	15.4 1960	63.5 1955	33.3 1916	9.6 1969	41.1 1946	32.1 1963	7.2 1961	19.6 1962	1945	1945	Champa.
33.4 1958	21.0 1953	261.0 1955	35.1 1956	21.6 1953	193.0 1950	35.7 1957	20.4 1963	212.0 1961	36.2 1957	13.6 1960	74.2 1959	33.5 1963	10.0 1950	6.0 1961	33.0 1962	6.4 1959	6.1 1954	1950	1950	Raigarh.
33.9 1931	20.0 1884	213.1 1884	34.7 1933	20.0 1933	170.3 1910	37.2 1899	18.3 1902	148.6 1905	37.8 1899	13.9 1933	148.6 1900	35.6 1935	8.3 1883	70.4 1930	32.2 1911	3.9 1902	52.1 1909	1881	1881	Raipur.
35.7 1962	18.9 1940	294.1 1951	33.9 1947	20.0 1951	195.3 1937	34.5 1959	18.9 1950	257.3 936	34.5 1957	11.7 1954	112.8 1938	32.8 1916	7.2 1939	58.4 1950	32.1 1953	3.9 1934	17.8 1940	1931	1931	Kanker.
35.6 1920	18.3 1958	189.9 1934	33.9 1922	16.7 1929	203.2 1951	35.0 1913	17.8 1950	163.8 1911	31.4 1913	11.1 1941	136.9 1938	33.0 1946	5.6 1912	102.9 1924	32.2 1916	3.9 1915	11.6 1962	1911	1911	Jagdalpur.
33.9 1902	19.4 1887	252.2 1903	31.1 1900	21.1 1913	396.1 1907	42.2 1951	17.2 1912	349.5 1893	42.8 1924	19.6 1889	92.7 1917	37.6 1957	5.0 1938	28.7 1896	36.1 1935	1.7 1903	14.0 1927	1881	1881	Gujarat Region Deesa.
41.7 1963	13.5 1959	152.0 1961	37.0 1967	20.5 1959	66.2 1960	49.5 1950	18.3 1962	297.0 1959	33.8 1960	12.8 1961	31.1 1959	36.1 1963	19.1 1960	19.0 1963	34.5 1963	5.5 1959	1.5 1960	1959	1959	Radhanpur.
34.1 1962	20.4 1958	307.0 1953	34.7 1957	21.3 1953	61.2 1950	39.0 1960	18.3 1963	191.4 1963	38.9 1961	11.0 1959	30.2 1957	36.7 1961	13.3 1963	18.3 1963	31.3 1963	0.1 1957	2.0 1957	1957	1957	Idar.
42.2 1902	21.1 1908	114.8 1927	38.9 1911	21.7 1929	150.6 1906	41.7 1951	19.4 1962	257.8 1950	42.8 1920	14.0 1961	52.8 1917	39.5 1901	9.7 1960	53.3 1947	35.6 1939	6.1 1954	14.0 1927	1893	1896	Ahmedabad.
45.0 1963	20.6 1947	240.3 1958	36.1 1942	21.0 1963	245.1 1933	38.9 1951	17.4 1963	265.4 1945	40.0 1951	11.7 1935	177.0 1954	36.1 1960	8.9 1938	65.4 1958	34.5 1962	5.0 1935	7.4 1931	1931	1931	Dohad.
..	..	..	..	..	..	37.0 1963	18.9 1963	21.3 1953	37.6 1963	17.1 1963	27.6 1963	35.9 1963	15.1 1963	39.1 1963	35.2 1963	0.3 1963	..	1963	1963	Vallabh Vidyanagar.
38.7 1960	22.2 1952	162.0 1963	35.8 1962	21.7 1953	277.1 1956	41.1 1951	20.2 1963	148.9 1958	41.1 1951	12.8 1960	71.4 1954	37.8 1951	10.6 1956	61.4 1962	35.0 1952	6.7 1954	6.4 1962	1949	1949	Baroda Aerodrome.
40.6 1962	21.1 1943	183.4 1941	37.2 1947	22.3 1953	233.0 1955	41.1 1951	18.9 1938	372.1 1945	41.7 1951	11.7 1955	138.4 1940	38.3 1951	7.2 1933	33.3 1934	36.1 1941	3.3 1937	4.5 1962	1933	1933	Baroda.
38.9 1960	22.7 1959	195.1 1954	35.6 1954	22.3 1952	217.0 1961	41.7 1951	21.0 1962	304.9 1954	41.7 1952	14.4 1954	85.0 1959	39.9 1957	10.9 1960	37.0 1963	37.2 1952	8.0 1959	2.0 1962	1951	1951	Broach.
38.9 1902	20.6 1889	159.2 1911	37.2 1932	21.1 1887	283.9 1933	41.1 1951	20.6 1881	339.4 1941	41.1 1932	14.4 1893	257.1 1394	39.4 1951	10.6 1881	148.3 1946	38.9 1953	6.7 1903	42.2 1933	1881	1881	Surat.
37.9 1961	23.0 1961	67.5 1960	35.1 1960	23.7 1960	42.0 1960	40.4 1960	22.3 1960	0.2 1960	49.4 1960	17.8 1961	0 ..	36.0 1960	12.5 1960	0 ..	31.9 1960	10.0 1961	0 ..	1960	1960	Bhulakai Bhimasar.
38.2 1962	22.9 1959	262.9 1959	33.4 1962	22.2 1963	68.0 1961	37.2 1960	18.0 1962	240.1 1959	40.8 1963	11.2 1961	34.8 1963	36.6 1960	6.5 1963	23.0 1963	35.2 1963	2.1 1962	0 ..	1959	1959	Naliya.
40.3 1962	20.6 1954	467.9 1959	37.8 1954	22.7 1963	83.8 1961	39.7 1960	17.9 1962	78.0 1958	41.1 1960	12.9 1961	95.4 1959	37.2 1957	8.7 1960	24.3 1963	34.9 1963	4.4 1961	3.8 1962	1954	1954	Bhuj (Rudramata).
39.3 1963	23.1 1962	35.0 1961	36.3 1962	23.4 1962	57.4 1961	37.6 1962	18.3 1962	29.2 1963	39.9 1963	13.7 1961	11.2 1963	36.5 1963	12.1 1961	45.0 1963	34.0 1963	9.0 1961	0 ..	1961	1961	Kandla Aerodrome.
37.2 1963	22.4 1957	147.4 1956	35.8 1958	23.3 1956	185.9 1956	38.3 1957	21.8 1963	64.8 1953	37.8 1955	17.3 1961	24.0 1961	37.2 1957	14.5 1960	55.8 1962	32.8 1958	9.4 1955	0.8 1957	1955	1951	New Kandla.
37.6 1961	21.1 1956	163.0 1959	34.7 1954	22.8 1956	175.3 1956	36.4 1960	20.6 1960	61.0 1961	39.4 1960	17.3 1957	32.8 1956	34.4 1963	13.5 1960	28.0 1963	31.9 1963	8.2 1959	15.0 1958	1954	1954	Mandvi.
39.7 1962	22.8 1956	82.6 1959	36.9 1958	21.7 1956	198.1 1953	39.4 1960	21.7 1962	112.0 1958	39.2 1958	16.1 1960	40.8 1954	37.2 1953	11.1 1956	31.0 1962	35.1 1963	5.0 1955	1.3 1957	1953	1953	Surendranagar.
32.6 1963	24.9 1963	5.6 1963	31.6 1963	23.4 1963	22.5 1963	30.4 1963	23.7 1963	7.5 1963	34.1 1963	23.0 1963	69.2 1963	30.1 1963	21.7 1963	16.6 1963	29.6 1963	18.9 1963	0 ..	1963	1963	Okha*.
39.9 1958	19.4 1950	335.0 1929	37.8 1954	20.6 1924	248.9 1954	41.7 1951	16.1 1923	133.3 1947	40.6 1952	14.4 1954	48.3 1963	37.2 1901	8.9 1938	49.5 1963	34.4 1955	3.9 1930	42.7 1929	1901	1901	Jamnagar (Aerodrome).
36.4 1956	18.3 1952	273.8 1933	32.8 1954	21.7 1908	302.3 1933	39.4 1929	22.2 1909	135.9 1921	40.0 1951	16.7 1949	138.1 1917	37.2 1901	12.2 1938	35.1 1951	33.9 1932	8.3 1903	28.5 1937	1901	1901	Dwarka.
40.6 1900	19.4 1941	375.2 1950	37.8 1947	20.6 1913	233.2 1900	40.6 1911	16.7 1912	184.7 1945	41.7 1925	12.2 1949	105.6 1939	39.3 1929	7.2 1917	99.8 1888	36.1 1896	2.8 1903	22.9 1929	1881	1881	Rajkot.
38.3 1952	21.0 1961	195.5 1957	36.8 1958	22.2 1958	117.0 1959	40.6 1951	21.0 1962	102.9 1954	41.7 1951	17.2 1954	141.0 1959	36.7 1951	12.2 1956	22.8 1963	34.6 1957	9.4 1955	3.0 1962	1951	1951	Bhavnagar Aerodrome.
35.2 1961	23.7 1963	205.4 1962	31.8 1963	23.6 1962	130.4 1962	36.7 1960	21.3 1962	91.5 1962	40.5 1963	15.3 1961	21.7 1961	37.7 1960	14.1 1961	36.2 1963	34.8 1963	10.4 1960	0 ..	1960	1960	Porbander Aerodrome.
36.4 1961	22.7 1963	312.5 1961	32.3 1963	22.9 1962	68.6 1962	37.6 1960	19.8 1962	166.8 1961	38.5 1969	14.6 1962	51.8 1963	37.0 1960	11.7 1960	1						

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Saurashtra and Kutch—contd.																		
Mahuva	34.3 1961	7.8 1954	2.5 1953	41.1 1953	8.3 1961	2.5 1961	42.8 1956	12.5 1957	11.4 1954	45.0 1954	13.9 1955	1.5 1956	43.9 1956	20.0 1957	0.5 1956	40.6 1953	22.8 1955	179.6 1959
Veraval	36.0 1961	4.4 1905	12.9 1926	38.3 1953	4.4 1893	18.1 1961	42.8 1945	9.4 1892	19.1 1911	42.8 1954	13.9 1903	124.7 1947	44.2 195.9	18.9 1909	123.2 1917	37.2 1954	20.0 1951	121.9 1960
Konkan																		
Dahanu	34.4 1957	8.3 1915	8.9 1948	37.8 1949	8.8 1961	5.6 1954	31.9 1946	12.1 1947	1.9 1962	40.6 1955	19.3 1957	59.9 1917	39.3 1944	20.6 1947	27.0 1960	31.3 1951	15.0 1949	378.0 1966
Bombay (Santa Cruz)	36.2 1961	7.4 1962	4.7 1962	39.4 1953	10.0 1950	18.0 1961	41.7 1956	14.1 1957	0.8 1951	42.2 1952	13.3 1951	1.5 1951	33.8 1959	20.6 1951	54.4 1951	36.7 1951	22.2 1954	305.6 1953
Bombay	35.0 1961	11.7 1935	49.3 1926	38.3 1949	11.7 1929	41.7 1917	39.7 1958	16.7 1905	34.3 1918	40.6 1955	20.0 1915	37.3 1917	36.2 1951	22.8 1951	126.2 1893	37.2 1911	21.1 1936	403.9 1886
Alibag	35.3 1958	9.4 1934	9.7 1948	37.8 1943	11.4 1961	34.5 1961	39.4 1945	15.6 1945	2.8 1940	40.0 1955	18.9 1937	8.4 1947	37.5 1960	21.7 1943	103.1 1933	34.4 1932	18.3 1945	225.0 1940
Bhira	36.9 1963	13.8 1963	0 1963	39.4 1963	12.1 1963	4.8 1963	41.8 1963	16.6 1963	2.4 1963	43.0 1963	20.1 1963	1.6 1963	42.5 1963	22.6 1963	0 1963	38.1 1963	21.9 1963	87.6 1963
Harnai	33.4 1958	15.6 1945	8.6 1945	35.0 1962	13.9 1950	1.4 1963	37.2 1946	16.1 1945	0 1945	36.1 1949	17.8 1950	31.5 1955	37.2 1955	20.0 1950	157.0 1956	34.4 1953	16.1 1945	231.8 1960
Ratnagiri	36.7 1912	12.2 1935	23.4 1888	38.3 1920	13.3 1901	32.0 1917	38.9 1922	16.1 1910	31.7 1900	36.1 1938	16.1 1915	25.9 1937	37.8 1883	21.7 1913	91.7 1893	35.0 1913	19.4 1919	899.9 1953
Devgarh	34.4 1952	15.6 1945	12.2 1947	35.9 1961	16.7 1961	1.5 1958	37.2 1948	18.7 1957	12.2 1947	37.2 1956	20.6 1953	23.6 1947	35.0 1954	20.0 1961	181.2 1961	37.2 1943	13.3 1945	276.0 1958
Veneurla	35.6 1955	12.0 1962	0.3 1959	38.9 1952	12.8 1950	2.8 1958	37.4 1958	15.0 1950	0.3 1951	40.0 1956	20.5 1961	17.0 1954	36.1 1949	21.9 1962	293.0 1961	31.6 1963	20.0 1956	333.3 1958
Madhya Maharashtra																		
Nandurbar	35.9 1958	8.9 1954	43.9 1955	40.6 1955	13.2 1959	0 1959	43.3 1956	14.2 1961	9.0 1963	45.6 1958	18.9 1955	41.2 1958	46.1 1955	21.7 1956	76.2 1956	42.8 1953	22.2 1956	80.0 1953
Jalgaon	35.6 1939	1.7 1945	29.6 1958	40.6 1953	3.9 1943	21.8 1941	43.9 1953	8.7 1961	15.6 1938	47.8 1958	19.4 1963	35.1 1951	46.1 1963	21.4 1962	115.1 1956	41.7 1953	21.1 1962	110.7 1956
Malegaon	35.0 1932	0.6 1935	38.1 1888	39.4 1953	—0.6 1929	43.4 1936	45.6 1889	5.6 1893	14.7 1915	44.6 1958	9.4 1905	27.0 1958	46.8 1962	16.7 1881	104.4 1903	44.4 1915	17.8 1932	111.0 1914
Deolali (Aerodrome)	33.5 1903	1.6 1962	3.8 1962	37.6 1953	—0.6 1950	1.8 1963	40.0 1953	7.2 1957	51.3 1913	42.8 1953	11.1 1955	43.2 1963	42.2 1955	17.3 1955	57.7 1951	40.1 1951	20.0 1952	66.3 1963
Ahmadnagar	36.1 1897	2.2 1945	51.6 1941	38.9 1897	2.8 1911	42.9 1894	40.6 1954	7.8 1892	88.4 1938	43.1 1958	10.6 1926	71.9 1937	43.7 1960	16.1 1917	119.8 1915	43.3 1920	18.3 1907	177.3 1931
Khandala . . . . .	..	..	19.1 1946	..	..	15.2 1937	..	..	1.4 1963	..	..	53.0 1959	..	..	62.4 1960	..	..	312.8 1961
Poona (Aerodrome)	32.8 1952	7.1 1962	0 1955	37.8 1955	6.6 1961	0 1955	40.0 1953	10.6 1961	42.9 1954	42.2 1961	12.2 1955	26.2 1959	41.7 1952	15.0 1955	74.4 1960	31.5 1958	18.9 1953	123.6 1961
Poona	35.0 1938	1.7 1955	22.3 1948	33.9 1953	3.9 1944	16.3 1892	42.8 1892	7.2 1908	35.1 1954	43.5 1897	10.6 1903	51.1 1896	43.3 1889	13.9 1898	82.5 1927	41.7 1997	17.2 1920	131.9 1961
Jur	33.9 1956	4.9 1962	0.5 1955	33.3 1953	5.0 1950	18.5 1952	41.1 1951	10.4 1957	23.2 1963	43.7 1958	14.4 1960	23.6 1957	43.6 1958	20.1 1960	81.4 1961	43.3 1953	18.9 1951	81.5 1954
Baramati	33.3 1955	6.7 1962	0 1959	37.1 1959	7.7 1961	0 1959	41.5 1959	10.8 1961	6.3 1958	43.2 1958	13.3 1955	22.6 1955	42.8 1958	19.4 1956	35.6 1959	41.9 1953	20.0 1956	74.4 1960
Sholapur	36.7 1897	4.4 1945	48.8 1943	39.4 1886	6.1 1911	34.3 1928	43.9 1892	12.2 1886	39.6 1893	44.4 1889	13.0 1915	48.0 1907	45.6 1938	16.1 1935	56.1 1952	45.6 1923	17.2 1922	143.8 1881
Miraj	33.9 1950	5.0 1945	46.5 1941	37.4 1961	6.7 1944	58.0 1963	40.6 1949	11.2 1957	27.4 1963	42.2 1942	15.0 1944	115.1 1937	42.2 1940	18.9 1947	108.2 1933	42.2 1944	18.4 1963	81.2 1959
Kolhapur	33.6 1959	8.7 1962	14.7 1947	37.4 1961	9.3 1961	12.0 1963	40.4 1959	12.8 1957	43.5 1948	41.7 1956	15.6 1955	51.2 1963	41.2 1959	18.3 1946	163.6 1961	31.4 1953	18.9 1956	101.1 1959
Marathwada																		
Aurangabad	37.2 1924	3.9 1945	51.6 1920	37.8 1953	2.2 1911	36.3 1894	42.2 1892	8.9 1893	23.4 1915	45.0 1896	10.0 1908	24.6 1937	45.6 1905	17.2 1924	75.5 1961	43.9 1923	17.2 1911	182.1 1953
Aurangabad (Chikalthan)	32.2 1955	3.3 1962	3.8 1959	37.2 1954	3.9 1961	5.2 1961	40.0 1955	7.1 1957	20.3 1954	43.6 1958	13.5 1963	8.0 1962	43.1 1960	17.3 1962	58.8 1961	42.2 1953	20.0 1954	94.2 1955
Parbhani	33.3 1955	4.4 1945	43.4 1926	38.3 1953	6.1 1949	34.8 1928	41.7 1953	11.6 1957	46.5 1927	45.0 1958	17.2 1955	39.8 1962	45.6 1954	20.8 1962	56.6 1916	45.6 1953	20.0 1951	87.9 1940
Nander	33.0 1961	7.0 1963	0 1959	38.0 1961	8.0 1963	5.4 1963	40.4 1962	14.2 1963	25.5 1961	45.0 1961	18.6 1963	69.7 1962	44.0 1961	22.4 1963	12.2 1961	41.4 1963	18.1 1961	53.1 1963
Bir	32.9 1961	6.2 1962	3.5 1962	36.9 1961	4.6 1961	5.2 1963	38.9 1962	11.0 1963	9.0 1962	43.6 1961	18.5 1962	33.0 1962	43.4 1962	20.5 1962	38.4 1962	40.4 1963	22.0 1963	72.0 1963
Vidarbha																		
Candia	32.0 1961	6.7 1951	42.4 1948	37.2 1951	6.7 1950	48.3 1947	41.7 1953	11.7 1952	34.3 1951	44.6 1961	18.3 1957	25.9 1952	46.1 1954	21.0 1963	23.6 1962	45.0 1953	20.6 1959	216.7 1955
Nagpur (Sonagaon)	35.0 1900	3.9 1937	60.3 1960	38.9 1887	5.0 1950	51.6 1942	45.0 1892	8.3 1898	45.0 1831	46.1 1942	13.9 1955	59.4 1937	47.0 1954	19.4 1917	58.4 1909	47.2 1931	20.0 1919	315.0 1911
Amraoti	35.0 1889	6.1 1934	59.2 1911	38.9 1953	5.0 1837	51.6 1928	43.9 1892	8.9 1893	51.6 1957	46.1 1898	12.8 1955	66.3 1937	46.7 1954	18.3 1917	47.2 1887	46.7 1923	19.4 1916	155.2 1927
Akola Aerodrome	32.0 1963	8.2 1963	2.4 1963	36.0 1963	9.8 1963	8.2 1963	39.5 1963	14.0 1963	8.4 1963	41.5 1963	19.0 1963	0 1963	45.2 1963	22.5 1963	4.5 1963	42.4 1963	20.8 1963	113.4 1963
Akola	36.2 1958	3.9 1937	49.0 1922	40.0 1953	2.2 1887	42.2 1907	44.4 1892	5.6 1908	39.6 1957	46.1 1942	11.1 1905	58.7 1937	47.8 1947	11.9 1960	44.7 1943	47.2 1923	20.0 1916	188.0 1955
Bramhapuri	31.8 1958	6.5 1962	30.6 1959	36.2 1958	7.8 1957	27.6 1961	40.5 1959	10.3 1962	47.5 1957	44.7 1961	16.7 1963	17.0 1957	46.6 1960	13.4 1962	43.7 1957	46.2 1958	20.5 1957	85.6 1960
Buldana	32.8 1956	9.2 1962	30.7 1955	36.7 1953	4.4 1950	25.4 1961	38.9 1953	13.5 1963	36.2 1955	42.2 1958	15.9 1962	31.0 1959	42.2 1962	20.0 1956	44.2 1961	41.7 1953	19.4 1955	89.0 1959
Yeotmal	33.3 1950	9.4 1954	36.0 1960	37.8 1953	7.2 1950	31.2 1950	41.7 1953	14.4 1957	29.7 1957	44.7 1958	16.1 1963	146.7 1952	46.1 1954	20.0 1955	50.0 1961	45.6 1953	17.1 1961	104.4 1953
Chanda	35.6 1900	2.8 1899	39.4 1924	39.4 1951	3.9 1905	94.2 1898	44.2 1892	7.2 1898	68.8 1893	46.1 1942	11.7 1905	65.3 1914	48.4 1912	18.9 1919	44.5 1903	47.8 1929	20.0 1919	182.1 1887
Pusad	33.0 1961	6.4 1962	5.0 1962	38.0 1962	8.3 1963	7.1 1963	39.9 1962	11.5 1961	22.2 1963	46.0 1961	18.2 1961	24.2 1962	46.0 1961	21.0 1961	25.2 1963	42.1 1963	21.1 1963	52.0 1963

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Tem-perature	Rain-fall	
35.6 1955	22.2 1961	167.9 1957	34.6 1962	21.1 1952	77.2 1957	37.5 1963	19.4 1963	99.9 1962	38.9 1963	15.6 1954	76.0 1959	36.2 1957	13.3 1953	15.9 1963	35.2 1962	9.4 1961	17.3 1954	1952	1952	Saurashtra &Kutch -Contd.
33.9 1902	20.4 1961	289.6 1945	33.3 1942	22.7 1960	270.0 1933	36.7 1955	20.6 1946	277.4 1926	40.0 1952	13.3 1949	73.7 1917	37.8 1951	10.0 1950	89.9 1896	35.6 1953	7.2 1950	25.7 1902	1891	1891	Mahuva.
35.0 1947	18.4 1960	431.0 1956	31.7 1947	20.6 1951	335.0 1945	33.9 1944	21.1 1954	481.0 1958	36.1 1953	17.2 1954	173.4 1959	36.7 1947	15.6 1955	256.5 1948	35.6 1952	11.1 1945	0.5 1954	1944	1944	Veraval.
34.8 1960	21.8 1957	310.6 1953	31.6 1963	19.4 1950	256.0 1954	35.6 1951	21.6 1962	212.4 1962	37.0 1957	16.7 1952	117.1 1955	36.3 1957	13.3 1950	23.1 1957	35.7 1963	10.6 1949	25.9 1962	1949	1949	Konkan
35.6 1902	21.7 1945	304.8 1923	32.2 1948	21.7 1943	287.0 1981	35.0 1929	20.0 1947	548.1 1930	36.6 1957	20.6 1954	148.6 1917	36.2 1957	17.8 1881	122.7 1927	35.7 1962	12.8 1929	47.8 1962	1881	1881	Dahanu.
32.3 1960	20.0 1959	295.9 1953	32.8 1932	21.1 1949	204.0 1954	32.8 1951	21.1 1947	396.2 1949	37.2 1936	18.3 1954	115.8 1938	36.7 1941	15.6 1950	106.7 1948	34.8 1960	13.9 1949	49.5 1962	1931	1931	Bombay.
32.8 1962	21.7 1963	328.6 1962	30.5 1963	20.9 1953	191.8 1963	35.0 1963	20.1 1963	147.4 1962	37.0 1963	16.1 1962	12.2 1962	37.0 1963	16.0 1962	12.2 1962	37.5 1963	12.6 1963	23.3 1962	1962	1962	Bombay (Santa Cruz).
32.2 1948	17.8 1950	242.6 1948	32.2 1947	20.6 1950	176.0 1947	31.7 1951	21.1 1947	308.6 1949	35.2 1962	19.4 1946	176.5 1947	35.6 1951	18.3 1946	72.6 1946	34.2 1963	18.9 1949	83.5 1962	1944	1944	Alibag.
32.8 1900	20.5 1919	304.3 1900	31.1 1939	21.1 1931	201.2 1885	34.4 1896	20.6 1962	236.7 1932	37.2 1888	17.8 1903	221.0 1938	37.2 1918	15.6 1955	243.8 1912	36.1 1896	14.4 1954	74.6 1962	1881	1881	Bhira.
31.7 1957	18.2 1961	215.2 1962	31.7 1948	19.4 1945	130.8 1948	32.2 1953	21.1 1945	235.2 1948	35.0 1962	19.4 1952	141.0 1951	36.1 1951	17.2 1952	67.1 1946	34.4 1953	16.1 1949	133.8 1962	1945	1945	Harnai.
32.4 1960	21.7 1956	237.7 1951	30.6 1950	21.7 1956	177.6 1958	32.8 1952	21.3 1957	128.6 1961	35.8 1960	17.0 1962	122.4 1951	35.6 1962	14.4 1950	49.6 1962	35.8 1963	10.6 1954	74.2 1962	1949	1949	Ratnagiri.
38.2 1962	21.1 1952	167.5 1958	38.9 1954	21.1 1956	82.0 1959	37.2 1963	20.6 1963	124.5 1954	38.9 1952	16.2 1958	163.0 1959	37.2 1957	11.7 1956	35.8 1963	35.0 1953	10.6 1954	22.0 1962	1952	1952	Devgarh.
39.9 1962	21.1 1938	110.7 1941	37.2 1947	20.0 1942	119.1 1942	38.9 1951	15.6 1942	111.8 1937	38.3 1951	10.0 1952	98.8 1943	36.5 1957	5.6 1950	59.9 1946	35.0 1953	1.7 1937	71.2 1962	1937	1937	Vengurla.
38.9 1960	18.3 1953	158.5 1896	37.2 1899	16.1 1899	115.3 1897	38.3 1899	16.1 1942	132.1 1894	40.0 1899	10.6 1935	109.7 1935	36.7 1908	5.6 1910	105.2 1912	35.0 1892	2.8 1926	43.0 1962	1881	1881	Madhya Maharashtra
34.1 1962	20.0 1951	157.0 1952	33.3 1950	19.4 1956	143.3 1956	34.0 1963	16.2 1963	107.2 1962	35.7 1957	9.4 1954	54.6 1956	33.1 1963	6.7 1955	62.5 1958	33.6 1963	5.0 1954	40.0 1954	1950	1950	Nandurbar.
47.2 1955	17.8 1944	174.3 1911	36.7 1899	16.1 1913	147.3 1957	36.7 1912	14.4 1896	148.8 1902	37.6 1960	10.6 1914	89.1 1943	35.6 1898	5.6 1892	124.7 1960	33.5 1963	3.3 1926	69.1 1942	1891	1891	Jalgaon.
..	..	516.4 1958	..	..	475.0 1956	..	..	308.4 1942	..	..	263.7 1938	..	..	188.7 1948	..	..	16.0 1942	..	1933	Malegaon.
34.8 1960	19.7 1963	103.6 1958	32.2 1958	17.2 1956	103.6 1956	37.2 1951	15.6 1952	60.7 1963	36.1 1951	12.8 1950	106.9 1951	33.3 1953	9.4 1955	76.2 1951	33.4 1963	7.8 1954	29.2 1962	1950	1950	Deolali (Aerodrome).
35.6 1915	18.9 1920	130.4 1953	35.0 1950	17.2 1920	108.7 1956	36.1 1951	16.1 1901	132.3 1938	37.8 1899	11.1 1910	149.1 1892	36.1 1896	7.2 1939	96.8 1939	35.0 1896	4.4 1940	41.1 1942	1881	1881	Ahmadnagar.
39.9 1959	17.9 1959	88.1 1956	37.2 1950	17.4 1957	94.2 1958	36.1 1951	15.3 1959	90.9 1962	36.3 1957	12.2 1952	58.1 1959	35.0 1959	8.9 1955	63.6 1959	33.9 1963	5.3 1959	43.2 1954	1950	1950	Deolali (Aerodrome).
36.2 1960	20.2 1956	37.1 1956	34.5 1958	17.8 1956	106.2 1956	35.6 1955	17.3 1962	110.2 1962	36.2 1957	12.8 1954	75.4 1957	33.4 1955	9.4 1956	46.2 1954	32.2 1954	7.8 1959	14.0 1954	1954	1954	Ahmadnagar.
38.9 1912	18.3 1914	160.3 1907	37.8 1899	15.0 1956	191.0 1940	37.2 1899	17.5 1959	169.9 1895	38.3 1896	12.8 1882	125.5 1957	36.1 1915	7.8 1881	127.8 1896	34.4 1896	6.7 1945	97.5 1886	1881	1881	Khandala.
35.0 1932	17.2 1945	61.0 1943	34.4 1941	17.8 1949	150.9 1932	35.6 1951	15.6 1935	93.7 1946	36.1 1942	12.2 1937	101.3 1956	34.4 1958	8.3 1950	114.1 1955	34.4 1941	7.2 1954	19.8 1933	1931	1931	Poona (Aerodrome).
32.6 1960	18.9 1955	151.6 1953	32.2 1950	18.9 1956	116.3 1956	35.0 1951	17.3 1962	81.8 1960	35.7 1960	13.9 1952	67.6 1953	33.3 1951	11.1 1955	105.7 1962	34.4 1963	8.9 1956	51.7 1962	1946	1946	Poona.
37.8 1897	18.3 1904	139.7 1916	36.1 1950	17.2 1955	134.6 1963	36.6 1896	16.1 1901	245.1 1891	37.8 1911	12.2 1903	124.6 1961	35.6 1896	7.2 1910	157.5 1946	34.4 1896	5.0 1902	92.7 1942	1896	1891	Jeur.
35.0 1952	18.9 1962	84.1 1953	33.3 1954	18.3 1956	69.3 1956	34.1 1960	15.5 1962	78.8 1958	35.2 1957	8.3 1952	94.5 1961	33.6 1957	5.6 1956	44.4 1958	33.6 1963	3.9 1954	28.4 1962	1952	1952	Baramati.
37.8 1950	20.2 1963	171.5 1923	36.7 1950	20.0 1953	139.7 1934	35.6 1951	18.5 1959	217.2 1923	36.7 1946	10.0 1954	168.9 1955	33.9 1953	8.3 1956	79.0 1936	32.8 1953	6.7 1945	32.3 1937	1944	1916	Sholapur.
37.4 1961	18.3 1961	136.0 1961	31.2 1961	19.1 1961	142.6 1963	35.2 1963	20.0 1962	65.1 1962	35.6 1963	13.8 1962	61.8 1962	32.6 1963	9.4 1962	27.0 1962	33.4 1963	8.0 1963	32.8 1952	1961	1961	Miraj.
35.9 1963	20.0 1963	61.6 1961	34.9 1962	20.2 1963	89.0 1962	33.8 1963	18.0 1962	59.6 1962	34.8 1962	13.0 1961	85.3 1961	31.9 1963	9.4 1961	42.3 1962	33.6 1963	8.0 1961	35.0 1962	1961	1961	Kolhapur.
37.7 1962	21.3 1958	164.2 1959	34.4 1947	18.3 1953	179.6 1961	34.4 1951	20.6 1952	281.4 1961	35.3 1957	13.3 1952	106.7 1949	33.9 1957	8.9 1950	54.6 1948	32.7 1960	7.2 1955	104.0 1962	1946	1946	Marathwada
40.6 1897	17.4 1942	219.2 1898	37.8 1899	18.3 1939	200.7 1875	38.9 1899	18.3 1904	184.4 1962	38.3 1899	11.6 1960	164.6 1936	35.6 1899	6.7 1912	81.5 1946	33.9 1941	5.6 1936	61.0 1962	1881	1881	Aurangabad.
39.4 1931	18.9 1890	230.1 1888	36.7 1902	15.6 1944	168.1 1944	38.3 1899	17.2 1893	234.9 1933	39.4 1899	12.8 1889	90.2 1940	35.6 1899	8.9 1884	78.0 1931	33.9 1913	8.3 1937	55.6 1885	1881	1881	Aurangabad (Chikalthan).
36.1 1963	21.4 1963	43.8 1963	33.2 1963	21.3 1963	76.5 1963	36.2 1963	19.0 1963	6.0 1963	36.9 1963	16.3 1963	81.3 1963	33.6 1963	13.6 1963	0	33.8 1963	7.5 1963	0	1963	1963	Parbhani.
40.6 1900	20.6 1941	188.5 1894	37.8 1950	18.4 1943	224.5 1900	40.0 1899	17.2 1904	365.4 1959	40.0 1899	10.0 1889	110.5 1887	36.1 1899	5.6 1912	112.3 1936	36.7 1896	3.9 1883	65.0 1885	1881	1881	Nander.
36.8 1962	18.7 1957	214.0 1960	33.5 1958	19.6 1957	117.0 1960	34.6 1960	19.4 1957	175.4 1959	35.6 1960	16.2 1960	65.2 1960	33.2 1963	11.3 1960	54.0 1958	37.2 1957	8.3 1963	18.6 1962	1957	1957	Bir.
34.4 1952	18.9 1949	122.9 1953	35.0 1950	16.6 1959	129.8 1959	32.8 1951	17.9 1959	170.4 1958	33.9 1951	14.4 1957	161.5 1961	32.2 1960	11.7 1949	49.4 1962	31.8 1960	10.2 1963	19.6 1950	1948	1948	Vidarbha
38.3 1950	20.0 1953	123.0 1959	35.6 1950	19.4 1955	165.6 1952	35.1 1960	19.6 1962	210.6 1959	36.1 1963	13.9 1952	85.9 1952	32.8 1957	10.0 1950	63.2 1962	34.0 1960	10.0 1950	29.9 1962	1949	1949	Gondia.
40.6 1897	17.8 																			

Sub-division and Station	January			February			March			April			May			June			
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	
Vidarbha—Contd.																			
Sironcha	33.3 1955	7.8 1951	7.1 1959	37.8 1953	9.7 1963	16.6 1961	41.7 1959	13.9 1952	95.0 1951	44.7 1959	20.0 1962	33.0 1962	46.7 1954	21.1 1955	28.4 1963	46.7 1953	20.1 1960	119.0 1959	
Coastal Andhra Pradesh																			
Kalingapatam	33.9 1911	12.1 1962	25.4 1908	37.8 1922	12.8 1918	83.1 1923	38.9 1946	16.1 1952	84.3 1940	41.7 1947	18.3 1930	63.5 1956	45.0 1923	20.6 1951	307.3 1914	43.9 1923	19.8 1960	188.9 1935	
Vishakhapatnam	31.1 1958	10.5 1962	132.1 1906	36.7 1922	13.3 1956	64.5 1901	38.3 1956	14.4 1952	64.5 1926	39.6 1961	18.3 1930	86.4 1963	43.3 1953	20.0 1904	115.3 1955	44.4 1923	21.1 1953	166.1 1929	
Kakinada	32.8 1950	12.0 1962	73.2 1921	37.8 1896	15.6 1918	45.0 1893	38.9 1934	17.2 1906	71.6 1905	42.8 1947	18.9 1942	61.0 1937	46.7 1934	21.1 1917	109.7 1914	47.2 1923	21.7 1940	501.4 1941	
Nidadavole	33.2 1953	12.3 1962	4.0 1959	36.6 1959	15.0 1956	28.0 1961	37.9 1962	13.8 1962	35.7 1960	42.8 1956	19.1 1962	27.0 1962	48.9 1962	21.6 1959	57.7 1957	46.2 1958	21.4 1963	59.9 1956	
Rentachintala	35.0 1953	10.6 1946	3.3 1948	39.4 1959	12.8 1949	21.3 1956	44.1 1953	15.6 1952	28.5 1950	46.1 1941	18.3 1937	69.1 1948	47.2 1948	18.3 1955	67.3 1940	47.2 1953	21.7 1947	101.6 1947	
Gannavaram	31.1 1952	14.2 1962	8.4 1956	37.8 1954	15.4 1963	13.8 1961	43.3 1953	17.2 1952	46.7 1957	41.4 1956	20.6 1963	77.5 1953	46.7 1956	21.1 1955	46.8 1962	46.7 1953	20.6 1951	150.1 1960	
Nagarjunakonda	31.1 1961	10.9 1962	2.6 1961	38.1 1961	15.4 1962	31.6 1962	42.6 1961	20.9 1962	0 ..	41.1 1961	21.1 1963	21.4 1962	44.7 1963	22.6 1961	23.0 1962	42.3 1963	20.4 1963	125.8 1963	
Masulipatam	33.3 1916	13.9 1945	76.2 1906	37.2 1927	14.1 1889	96.5 1901	42.2 1892	16.7 1906	150.4 1926	41.4 1892	18.3 1926	101.3 1942	47.8 1906	19.4 1893	82.5 1904	46.1 1924	29.0 1961	133.3 1915	
Ongole	31.9 1946	14.0 1962	27.3 1953	33.3 1954	14.4 1945	47.3 1959	43.3 1953	18.3 1945	52.3 1951	41.1 1956	20.6 1950	81.1 1963	46.1 1956	16.1 1949	102.6 1949	46.1 1953	22.4 1961	31.4 1961	
Nellore	31.6 1956	15.0 1946	94.2 1906	39.1 1927	16.1 1891	146.8 1923	43.9 1892	17.2 1910	59.2 1913	45.6 1895	20.6 1924	73.7 1900	46.7 1892	21.7 1947	185.9 1952	46.7 1894	21.1 1912	33.8 1903	
Delangana																			
Amalapuram	33.9 1957	9.1 1955	10.9 1953	33.9 1951	9.4 1949	14.0 1961	42.8 1953	14.4 1952	21.1 1951	44.7 1961	20.0 1956	62.0 1961	47.2 1943	21.1 1949	65.5 1957	47.2 1953	21.7 1959	140.7 1953	
Azambud	33.6 1928	5.6 1899	30.7 1943	38.3 1934	6.1 1911	72.4 1923	43.3 1923	11.1 1892	43.9 1950	44.4 1942	12.8 1905	76.2 1937	47.2 1923	18.3 1917	71.1 1922	46.1 1931	16.7 1902	246.1 1914	
Marham Kosala	31.0 1921	3.9 1945	53.4 1921	37.8 1934	10.6 1911	82.0 1962	42.2 1953	15.0 1906	71.1 1939	44.7 1961	17.3 1957	83.6 1937	46.7 1928	17.2 1917	75.7 1940	46.1 1953	20.6 1927	197.6 1943	
Makinet (Aer. from)	36.7 1886	12.0 1962	0 ..	35.3 1959	13.5 1961	50.0 1962	23.3 1959	16.1 1958	31.2 1958	40.6 1956	17.7 1963	27.2 1963	43.3 1956	18.9 1957	32.5 1955	42.2 1953	18.9 1954	166.9 1955	
Machilipatnam	31.7 1958	3.4 1962	32.0 1961	38.3 1954	11.7 1956	18.0 1962	42.8 1953	15.6 1952	25.4 1954	43.9 1956	18.3 1956	30.0 1963	46.7 1956	21.7 1955	46.2 1962	46.8 1958	20.6 1954	109.2 1963	
Madakasira (Aer. from)	33.0 1929	6.1 1946	93.2 1922	37.2 1951	8.9 1911	42.9 1912	42.2 1892	13.2 1957	163.1 1928	43.3 1941	16.1 1917	60.7 1947	44.4 1935	19.4 1917	65.0 1905	43.9 1931	17.8 1922	122.7 1914	
Machilipatnam	33.0 1950	9.4 1946	11.4 1941	38.9 1954	11.7 1943	39.6 1946	43.3 1953	16.1 1952	47.6 1944	45.0 1941	18.9 1945	63.0 1945	47.2 1947	21.1 1948	46.5 1948	46.7 1953	21.6 1961	92.7 1953	
Machilipatnam	32.6 1960	11.5 1962	0.3 1953	37.0 1961	11.7 1956	8.0 1962	40.0 1953	15.6 1952	43.4 1958	42.2 1956	19.2 1958	65.5 1957	43.3 1956	19.9 1962	79.3 1952	43.3 1953	20.6 1955	82.5 1961	
Rayachota																			
Rayachota	36.1 1897	8.3 1891	41.1 1915	38.5 1899	11.1 1943	66.8 1928	41.7 1925	12.8 1921	50.6 1893	44.4 1896	16.1 1905	42.2 1907	45.6 1924	19.4 1955	165.6 1932	44.4 1898	20.0 1935	31.3 1961	
Rayachota	31.1 1953	11.5 1962	5.1 1947	37.9 1959	13.3 1947	10.5 1947	40.6 1953	15.0 1951	25.9 1951	42.2 1956	18.3 1950	67.1 1956	42.2 1953	18.9 1951	79.6 1961	41.7 1953	20.6 1953	59.9 1957	
Rayachota	37.1 1946	11.7 1912	34.8 1896	40.6 1897	11.4 1948	51.6 1901	43.3 1905	17.2 1925	131.3 1915	45.0 1906	17.8 1907	116.6 1898	46.1 1906	19.4 1896	115.1 1940	45.0 1923	17.8 1944	152.4 1957	
Rayachota	31.6 1958	10.6 1961	19.3 1947	35.0 1959	11.6 1960	22.6 1953	37.2 1953	10.5 1960	19.0 1957	38.4 1961	18.0 1963	50.0 1956	38.9 1947	15.6 1946	80.5 1951	37.2 1953	18.9 1957	69.6 1958	
Madras State																			
Madras	32.8 1894	13.9 1905	212.9 1915	36.7 1927	15.0 1944	123.2 1929	40.6 1953	16.7 1908	64.5 1925	42.8 1908	20.0 1939	96.3 1915	45.0 1910	21.1 1886	214.9 1943	43.3 1948	20.6 1909	59.2 1931	
Madras (Sinnambakkam)	30.8 1956	16.1 1950	73.2 1903	35.0 1956	16.2 1960	27.9 1955	40.0 1953	18.3 1954	21.8 1963	41.1 1956	21.1 1950	100.3 1951	42.2 1953	21.1 1952	244.3 1952	42.2 1953	21.0 1961	52.5 1961	
Vellore	34.2 1962	11.7 1946	69.1 1922	37.8 1945	12.8 1922	67.3 1966	40.6 1953	14.4 1934	49.8 1915	43.9 1908	17.8 1950	83.1 1951	44.4 1906	19.4 1902	214.4 1943	42.8 1935	20.6 1922	94.2 1938	
Tanjavaram (Aer. from)	32.3 1961	16.7 1963	31.0 1963	34.3 1962	16.6 1960	42.2 1961	37.2 1961	19.8 1963	5.8 1963	41.3 1962	22.7 1963	19.6 1963	43.6 1961	22.0 1963	67.3 1962	42.0 1963	21.9 1961	78.7 1961	
Tirupattur	33.5 1959	11.1 1962	8.4 1961	37.2 1959	11.4 1963	20.3 1960	38.8 1961	14.5 1963	47.0 1960	40.2 1960	18.5 1963	29.4 1962	40.5 1959	21.0 1963	53.4 1962	39.1 1959	20.1 1962	64.4 1962	
Mettur Dam R.S.	32.1 1963	16.3 1963	.. ..	34.9 1963	16.3 1963	0 ..	38.6 1963	21.0 1963	14.0 1963	37.7 1963	20.1 1963	54.1 1963	39.7 1963	22.8 1963	15.2 1963	38.5 1963	21.8 1963	20.6 1963
Cuddalore	31.7 1951	13.3 1894	131.4 1961	36.1 1898	14.4 1918	119.4 1930	38.9 1953	16.1 1898	183.1 1933	42.2 1908	19.4 1939	120.4 1939	43.3 1953	21.1 1950	572.0 1943	42.8 1905	21.1 1898	82.5 1921	
Kallakurichi	34.3 1959	15.0 1950	58.0 1963	37.7 1959	15.6 1950	52.8 1956	41.7 1953	17.2 1951	58.6 1963	41.7 1956	20.3 1959	75.0 1962	42.8 1956	20.5 1963	165.9 1957	41.4 1968	21.5 1962	74.0 1963	
Salem	37.2 1925	12.8 1907	65.8 1943	39.4 1926	11.1 1907	65.8 1893	41.7 1892	14.4 1934	80.8 1884	42.8 1908	18.3 1887	95.5 1929	42.8 1931	18.3 1893	103.6 1930	42.8 1921	20.0 1885	115.6 1902	
Coimbatore (Pilamedu)	35.9 1957	12.2 1949	21.3 1961	37.3 1959	13.0 1960	49.0 1950	38.7 1959	15.6 1949	17.0 1951	39.7 1961	18.3 1949	111.0 1958	39.4 1952	15.6 1949	69.3 1957	35.7 1959	18.3 1949	23.7 1959	
Coimbatore	35.0 1887	11.7 1912	141.5 1900	36.7 1899	12.8 1910	64.8 1922	39.3 1959	15.6 1930	83.8 1915	40.0 1906	17.8 1899	54.9 1954	39.4 1952	16.7 1962	85.6 1930	38.3 1895	18.3 1893	132.6 1941	
Nagapattinam	31.7 1899	16.1 1912	245.1 1923	35.6 1898	15.6 1884	125.0 1938	40.0 1953	16.7 1894	126.5 1923	41.7 1908	20.0 1894	151.6 1931	42.8 1898	20.6 1901	164.1 1930	41.7 1884	20.6 1882	79.3 1935	
Tiruchirappalli	35.6 1925	14.4 1884	114.8 1909	40.0 1906	13.9 1884	137.9 1891	42.2 1892	15.6 1896	80.8 1906	42.8 1896	18.3 1937	160.5 1889	43.3 1896	19.4 1955	183.1 1930	43.9 1888	20.0 1911	73.4 1894	
Vedaranyama	30.6 1961	19.6 1963	65.0 1961	32.8 1962	19.4 1963	15.0 1962	34.7 1962	22.1 1963	154.1 1963	36.5 1961	22.8 1961	11.4 1962	39.5 1962	22.5 1961	16.0 1962	38.1 1963	20.9 1961	126.1 1962	

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temperature	Rain-fall	
38.9 1951	20.1 1960	167.6 1960	35.1 1950	18.9 1954	247.4 1953	35.2 1957	21.7 1959	100.9 1957	36.9 1957	14.4 1954	115.8 1957	33.9 1957	10.6 1950	41.0 1961	33.0 1960	9.7 1961	80.1 1962	1950	1950	Vidarbha—Contd. Sironcha
38.9 1911	21.5 1963	205.7 1956	36.7 1923	21.4 1962	192.3 1912	36.7 1920	20.9 1961	310.6 1911	35.6 1961	16.7 1952	264.2 1962	33.9 1914	13.3 1926	280.4 1923	31.7 1951	12.2 1937	221.7 1909	1911	1906	Coastal Andhra Pradesh Kalingapatnam
38.3 1899	21.3 1960	145.0 1951	38.2 1960	21.1 1907	121.4 1957	37.8 1939	22.2 1953	148.6 1914	36.8 1957	17.8 1952	293.3 1958	33.9 1942	15.0 1929	270.5 1923	32.8 1951	12.8 1959	191.3 1909	1896	1901	Vishakhapatnam
41.7 1897	21.1 1938	127.0 1947	37.8 1902	21.7 1955	146.1 1937	37.2 1920	21.7 1958	285.7 1956	37.2 1907	17.2 1949	281.9 1936	33.9 1951	15.6 1910	276.3 1923	32.2 1902	13.9 1902	130.3 1896	1896	1891	Kakinada
36.4 1962	21.9 1959	119.0 1961	34.5 1960	22.4 1957	66.5 1957	34.9 1957	22.1 1960	64.0 1961	36.5 1957	20.8 1960	146.3 1960	33.5 1963	15.5 1959	47.5 1957	33.1 1960	12.9 1959	17.2 1960	1955	1955	Nidadavole
40.6 1952	21.7 1956	87.6 1953	39.4 1950	21.7 1958	103.0 1956	38.3 1946	21.3 1958	154.9 1954	38.1 1957	16.7 1950	153.2 1945	36.1 1951	12.2 1950	71.6 1956	34.7 1963	10.0 1936	53.3 1952	1956	1956	Rentachintala
39.4 1952	21.5 1957	99.6 1956	36.7 1952	22.0 1959	85.8 1953	36.7 1957	18.2 1957	113.0 1954	36.1 1951	18.3 1952	131.1 1956	35.0 1951	16.2 1960	46.0 1956	33.9 1951	15.0 1961	10.7 1952	1951	1950	Gannavaram
37.3 1963	23.2 1963	60.6 1961	36.3 1962	22.6 1961	42.6 1961	36.7 1963	22.8 1963	32.0 1962	36.3 1962	20.6 1961	135.0 1961	31.2 1962	14.3 1961	76.4 1962	32.2 1961	10.6 1961	10.4 1962	1961	1961	Nagarjuna Konda
41.7 1897	19.4 1893	115.6 1935	38.3 1920	21.7 1952	135.6 1886	37.8 1883	20.6 1895	117.0 1962	37.2 1888	18.9 1895	502.4 1949	31.4 1891	13.9 1934	355.6 1938	32.2 1951	14.4 1937	159.3 1917	1891	1891	Masulipatam
40.0 1952	21.2 1957	80.3 1956	38.5 1960	21.7 1960	66.0 1949	38.9 1952	21.7 1959	242.7 1949	39.1 1963	13.3 1947	184.9 1953	35.2 1959	16.7 1955	258.3 1946	33.9 1951	15.1 1959	87.4 1952	1945	1945	Ongole
45.6 1951	22.2 1943	95.3 1950	40.6 1899	21.7 1912	75.2 1923	41.7 1899	21.7 1945	133.6 1909	39.4 1900	18.9 1895	144.0 1950	36.7 1915	16.7 1959	356.9 1936	35.0 1909	14.4 1895	189.2 1902	1891	1891	Nellore
40.0 1950	21.1 1950	119.9 1956	36.7 1949	21.7 1959	89.4 1951	37.3 1953	21.1 1959	106.0 1959	38.4 1957	15.6 1951	81.6 1947	35.4 1963	11.1 1952	70.2 1961	33.9 1956	8.5 1959	3.1 1952	1947	1947	Telangana Ramgundam
40.0 1904	14.4 1958	298.0 1953	37.8 1901	17.2 1901	157.7 1944	37.2 1920	17.2 1905	251.5 1929	38.9 1951	11.7 1921	196.9 1939	35.6 1926	7.2 1929	30.0 1936	35.0 1920	4.4 1897	49.8 1918	1891	1891	Nizamabad
39.9 1920	17.8 1911	227.8 1903	37.2 1920	19.4 1905	190.5 1921	38.3 1929	19.4 1901	304.3 1903	37.3 1920	15.0 1952	136.4 1957	34.4 1920	9.4 1904	92.7 1916	33.9 1920	8.3 1902	42.4 1929	1901	1901	Hanamkonda
36.0 1963	19.4 1963	89.7 1963	33.2 1960	19.4 1958	141.2 1955	35.6 1956	17.8 1954	121.7 1954	33.5 1963	15.0 1951	67.3 1957	30.6 1962	12.3 1955	82.5 1962	32.0 1963	12.7 1962	51.3 1962	1952	1952	Hakimpet (Aerodrome)
39.4 1952	21.7 1954	73.9 1956	36.0 1960	21.1 1952	119.0 1959	36.6 1959	21.2 1961	99.0 1962	37.6 1957	15.6 1952	93.0 1963	31.1 1957	12.2 1953	44.5 1956	32.3 1958	9.8 1961	40.4 1952	1952	1952	Bhadrachalam
37.2 1918	19.4 1931	109.2 1916	36.1 1950	19.4 1955	190.5 1951	36.1 1927	17.3 1912	153.2 1903	36.7 1896	13.4 1951	147.1 1903	33.9 1909	7.3 1939	95.5 1927	33.3 1930	7.2 1945	44.5 1913	1891	1896	Hyderabad (Begampet)
39.4 1952	20.5 1959	299.7 1954	36.3 1960	20.2 1961	107.2 1950	37.2 1957	20.6 1942	152.1 1947	37.4 1957	16.7 1952	130.3 1941	33.9 1951	11.7 1941	86.4 1946	33.4 1960	10.0 1945	17.8 1947	1941	1941	Khammam
36.8 1957	19.4 1952	104.4 1956	34.4 1953	20.0 1956	78.1 1961	34.4 1952	19.4 1954	79.0 1955	35.1 1957	16.1 1952	68.6 1952	32.7 1957	12.3 1953	32.5 1953	33.4 1963	12.2 1956	44.5 1962	1952	1952	Mahabubnagar
33.3 1915	20.6 1903	132.1 1901	37.8 1899	20.0 1929	121.9 1955	37.8 1899	19.1 1892	209.1 1893	38.3 1893	15.9 1959	146.3 1916	36.1 1896	10.0 1950	80.5 1903	31.4 1929	6.7 1902	71.1 1906	1891	1896	Rayalaseema Kurnool
37.2 1963	21.1 1956	84.4 1960	36.7 1949	21.2 1957	77.3 1949	36.1 1957	19.4 1951	168.0 1959	35.2 1962	15.6 1950	78.5 1946	35.0 1959	12.3 1950	99.3 1943	33.2 1963	12.2 1951	31.0 1962	1946	1946	Anantapur
40.6 1897	17.2 1943	103.9 1894	40.0 1899	19.4 1921	176.0 1910	39.4 1907	19.4 1920	173.5 1905	38.9 1922	16.7 1943	270.4 1953	36.1 1927	13.9 1939	104.7 1943	35.6 1930	10.6 1911	85.1 1893	1891	1891	Cuddapah
34.4 1946	16.7 1952	100.1 1954	33.9 1951	13.1 1958	61.1 1953	35.9 1952	16.1 1949	88.7 1956	32.8 1948	15.0 1947	157.7 1951	31.1 1947	12.2 1950	53.8 1960	29.4 1951	10.6 1960	72.4 1946	1945	1945	Arogyavaram
41.1 1915	21.5 1959	116.3 1910	40.0 1918	20.6 1935	91.7 1950	38.9 1865	20.6 1864	100.3 1891	39.4 1920	16.7 1889	233.7 1833	31.4 1952	15.0 1901	236.2 1922	32.8 1909	13.9 1895	261.6 1901	1881	1891	Madras Madras
39.4 1951	22.0 1961	68.3 1954	38.9 1953	21.7 1957	92.2 1953	37.8 1952	22.2 1956	104.9 1956	36.7 951	20.6 1952	142.5 1962	35.0 1951	16.7 1954	209.6 1960	31.7 1951	16.1 1952	113.3 1952	1949	1949	Madras (M nambakkam)
40.6 1902	20.6 1910	125.2 1910	39.4 1901	21.1 1952	106.2 1909	38.3 1908	20.0 1956	122.9 1921	37.8 1954	15.6 1911	170.9 1943	35.0 1952	13.9 1921	299.0 1930	33.9 1909	12.2 1950	152.9 1901	1901	1901	Vellore
40.0 1963	22.5 1962	37.1 1961	37.3 1962	21.9 1963	85.6 1963	38.1 1963	21.7 1963	79.0 1960	37.2 1963	21.0 1962	112.6 1962	31.0 1962	19.4 1962	170.7 1959	32.2 1960	17.9 1962	72.4 1960	1959	1959	Tambaram (Aerodrome)
37.5 1963	20.5 1963	89.0 1960	37.6 1960	20.2 1962	77.0 1952	36.6 1961	19.2 1962	120.0 1960	35.4 1960	18.5 1960	88.6 1963	31.9 1962	13.5 1962	76.0 1959	31.8 1960	13.2 1961	31.0 1962	1959	1959	Tirappattur
37.4 1962	22.7 1963	37.3 1963	36.6 1962	21.6 1962	40.6 1963	37.6 1963	22.1 1962	80.3 1962	34.9 1962	21.8 1962	44.4 1963	33.2 1962	18.2 1962	13.3 1963	32.1 1963	18.2 1963	43.2 1963	1962	1962	Mettur Dam R.S.
40.6 1895	18.9 1911	100.8 1949	39.4 1923	20.6 1899	134.6 1892	38.3 1891	20.0 1899	135.6 1911	38.9 1899	18.9 1899	208.3 1895	35.0 1915	16.7 1901	309.9 1913	35.0 1895	11.1 1933	426.5 1951	1891	1891	Cuddalore
40.0 1952	21.7 1951	108.7 1955	36.4 1959	21.0 1962	75.9 1951	38.4 1957	19.9 1932	118.0 1961	37.2 1951	13.9 1950	113.0 1955	36.7 1948	16.1 1954	260.9 1959	33.3 1950	16.1 1954	92.0 1963	1948	1948	Kallakurichchi
40.6 1923	18.9 1887	125.5 1952	38.9 1885	19.4 1909	176.3 1939	38.9 1891	18.9 1887	250.2 1885	37.8 1918	15.6 1911	165.6 1916	35.6 1948	12.8 1901	121.9 1862	35.6 1926	12.8 1945	131.3 1884	1881	1881	Salem
33.5 1958	16.1 1949	39.1 1949	33.6 1962	16.1 1949	52.1 1950	35.6 1955	16.7 1948	116.8 1950	35.0 1949	16.1 1948	65.2 1960	32.8 1952	14.4 1954	85.5 1960	32.2 1950	12.8 1951	92.4 1963	1948	1948	Coimbatore (Pilamedu)
35.6 1898	16.7 1911	103.6 1924	35.6 1889	17.2 1921	59.4 1916	35.8 1959	17.8 1954	75.7 1912	36.1 1918	15.0 1911	107.4 1891	34.4 1892	13.9 1901	104.7 1957	35.0 1899	12.2 1883	109.7 1930	1881	881	Coimbatore
41.7 1898	21.7 1936	113.0 1916	40.6 1898	20.0 1963	125.7 1900	37.8 1907	20.6 1897	78.7 1921	37.2 1908	20.6 1891	596.2 1930	35.0 1948	16.7 1951	365.5 1918	33.9 1909	16.7 1886	402.6 1963	1881	1881	Nagapattinam
41.1 1921	21.1 1926	94.7 1916	40.6 1888	20.6 1935	110.0 1944	40.6 1929	20.6 1908	117.9 1963	38.9 1906	18.9 1891	319.0 1930	36.7 1923	16.7 1884	298.2 1939	35.6 1926	14.4 1883	56.8 1963	1881	1881	Tiruchirappalli
1 1963	22.1 1962	33.2 1961	27.7 1963	22.0 1963	52.8 1962	37.0 1963	20.2 1961	41.2 1963	35.4 1											

TABLE III (A) EXTREMES OF MAXIMUM AND MINIMUM TEMPERATURES (°C) AND

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Madras State—Contd.																		
Atirampattinam	32.0 1962	17.6 1962	83.2 1961	32.8 1963	18.8 1963	6.8 1962	35.4 1962	20.0 1961	0 ..	35.6 1961	22.0 1962	67.2 1962	40.0 1962	22.5 1963	46.2 1963	36.0 1963	23.0 1962	51.8 1962
Madurai	34.4 1936	15.6 1907	152.4 1921	38.3 1906	16.1 1884	188.0 1929	41.7 1882	17.2 1909	100.3 1947	41.7 1935	19.4 1909	166.4 1891	41.7 1956	17.8 1920	102.4 1961	42.2 1935	17.8 1897	105.4 1927
Madurai Aerodrome	33.3 1939	17.2 1963	54.6 1962	36.1 1959	16.5 1960	6.8 1959	38.0 1959	18.6 1959	62.8 1963	39.5 1961	22.2 1963	51.4 1960	39.9 1959	21.2 1961	66.4 1961	39.1 1960	22.8 1962	55.3 1962
Tondi	31.8 1960	18.9 1962	81.0 1961	32.5 1961	18.6 1960	16.0 1960	33.0 1962	21.6 1962	62.7 1963	34.1 1962	22.5 1961	28.6 1960	39.2 1961	22.7 1962	48.0 1962	38.6 1960	22.0 1963	57.0 1961
Pamban	33.3 1902	20.0 1956	127.5 1902	33.3 1906	19.4 1939	88.9 1902	35.0 1953	20.6 1959	63.0 1938	37.2 1930	20.6 1949	81.3 1954	36.7 1923	21.1 1891	102.6 1930	37.2 1930	20.6 1897	55.6 1940
Tuticorin	33.3 1955	18.4 1962	90.0 1961	31.1 1958	18.3 1956	41.2 1959	34.8 1961	21.1 1956	62.2 1957	38.3 1956	22.2 1961	126.0 1961	41.1 1956	21.6 1962	41.3 1958	38.9 1958	21.7 1960	11.4 1956
Palayankottai	33.9 1960	18.5 1957	292.8 1963	36.2 1957	19.2 1961	61.0 1962	41.7 1953	21.1 1959	83.3 1954	41.7 1956	22.2 1955	74.9 1947	42.2 1953	21.4 1962	83.6 1959	42.2 1953	21.7 1955	20.6 1962
Kanniyakumari	33.5 1962	21.4 1963	53.7 1961	33.4 1961	21.6 1963	27.0 1961	34.6 1963	23.1 1963	55.0 1961	34.6 1961	21.6 1961	59.0 1962	35.6 1961	22.2 1961	53.0 1962	33.5 1963	21.9 1961	49.4 1963
Coastal Mysore																		
Karwar	36.1 1954	13.6 1962	0.8 1958	38.1 1962	14.0 1961	0 ..	37.6 1963	15.8 1962	16.8 1954	38.9 1956	21.0 1957	41.4 1963	34.4 1958	21.3 1962	181.2 1902	34.0 1963	20.6 1958	214.1 1960
Honavar	36.5 1961	15.6 1946	18.5 1943	37.2 1943	14.2 1960	1.5 1947	37.8 1948	18.8 1958	19.8 1954	35.0 1956	20.6 1951	62.0 1956	35.0 1941	21.1 1950	238.5 1955	34.7 1963	21.1 1954	292.6 1946
Mangalore (Bajpe)	36.6 1957	17.3 1953	4.6 1963	36.4 1959	17.9 1960	0 ..	37.7 1958	20.1 1957	48.5 1963	35.0 1961	21.6 1961	43.2 1959	36.1 1960	20.6 1959	155.7 1961	34.3 1963	20.8 1958	251.2 1959
Mangalore	36.3 1961	16.7 1911	40.6 1943	37.8 1920	16.7 1911	73.1 1962	37.3 1958	18.3 1911	82.8 1946	36.1 1916	20.0 1954	117.1 1939	36.7 1921	18.9 1911	360.9 1909	34.4 1923	20.0 1920	252.0 1897
Interior Mysore North																		
Bidar	33.9 1925	3.9 1901	51.3 1906	37.2 1926	9.4 1950	29.2 1928	41.7 1910	12.8 1925	36.3 1938	42.2 1946	12.2 1918	110.5 1907	43.3 1931	6.7 1918	86.9 1943	42.8 1953	10.0 1918	184.9 1943
Gulbarga	36.1 1897	6.7 1937	42.4 1922	38.3 1903	11.1 1911	57.1 1929	42.8 1892	12.8 1910	76.0 1960	43.9 1923	13.3 1902	79.3 1907	45.0 1912	18.3 1892	124.7 1952	45.0 1923	12.8 1910	144.8 1928
Bijapur	39.4 1943	7.2 1945	89.1 1912	41.1 1943	8.9 1930	23.6 1928	41.1 1910	13.3 1910	39.9 1938	42.2 1931	16.1 1905	66.0 1933	43.3 1912	17.8 1940	90.2 1956	42.2 1923	17.2 1903	69.0 1961
Raichur	35.6 1897	10.0 1899	49.8 1926	38.3 1897	12.8 1929	49.3 1923	42.8 1892	16.7 1936	37.0 1963	43.3 1927	16.1 1936	95.8 1901	45.6 1928	18.3 1927	87.9 1952	43.3 1893	16.1 1896	118.1 1901
Belgaum	22.6 1956	8.1 1962	0.6 1963	36.3 1961	9.3 1961	40.9 1956	38.2 1959	10.4 1957	38.2 1960	39.4 1956	12.3 1955	69.1 1936	38.6 1959	17.7 1960	129.5 1955	33.9 1963	17.7 1958	132.3 1955
Belgaum (Samra)	32.3 1956	10.6 1956	3.6 1963	36.0 1957	10.3 1961	15.5 1956	38.3 1953	9.4 1957	32.8 1960	40.0 1956	14.4 1955	50.6 1962	39.4 1953	17.2 1955	69.4 1962	33.3 1953	18.3 1956	94.2 1955
Gadag	34.5 1960	11.1 1951	21.4 1935	37.7 1961	11.1 1950	23.1 1963	40.0 1953	15.0 1940	61.7 1948	41.1 1941	17.2 1935	65.8 1962	41.7 1939	18.9 1952	81.8 1943	40.6 1953	19.4 1956	100.5 1963
Interior Mysore South																		
Bellary	36.7 1897	10.6 1891	46.2 1884	39.4 1897	12.2 1891	59.9 1917	42.8 1892	14.4 1885	26.7 1930	43.9 1909	16.1 1905	77.0 1956	43.9 1897	18.3 1890	162.3 1949	42.2 1915	18.9 1956	85.3 1915
Chitradurga	33.9 1906	11.1 1918	104.1 1918	36.1 1931	13.3 1947	88.9 1944	38.9 1925	16.1 1955	17.8 1915	39.4 1941	17.2 1904	105.7 1956	41.7 1931	16.7 1951	181.6 1955	37.8 1935	17.2 1906	118.4 1897
Shimoga	33.3 1962	9.1 1962	1.0 1953	37.2 1953	10.4 1960	3.2 1962	38.9 1953	11.7 1951	32.2 1963	38.7 1962	15.6 1962	114.5 1956	39.2 1959	18.3 1954	89.4 1957	36.1 1953	18.3 1956	114.4 1959
Agumbe	30.3 1962	6.6 1963	0 ..	33.0 1962	7.6 1963	0.4 1963	34.0 1962	11.8 1963	110.0 1963	34.0 1962	15.4 1963	18.0 1962	33.4 1963	17.6 1963	116.0 1963	30.4 1963	17.4 1963	514.0 1963
Balehonnur	32.8 1953	10.0 1946	8.4 1947	33.1 1961	11.1 1940	32.3 1952	36.1 1962	12.2 1940	58.7 1936	35.6 1962	13.9 1952	102.6 1956	35.6 1959	15.6 1952	218.4 1955	32.8 1953	15.6 1943	172.7 1941
Hassan	32.2 1955	7.3 1955	59.7 1921	35.0 1906	8.3 1898	50.3 1941	36.7 1934	9.4 1898	57.9 1954	37.2 1942	14.4 1905	72.9 1899	37.8 1906	14.4 1923	143.8 1903	34.4 1953	16.1 1936	94.5 1941
Bangalore	32.2 1925	7.3 1884	65.8 1908	34.4 1926	9.4 1884	67.3 1901	37.2 1925	11.1 1884	50.8 1911	38.3 1931	14.4 1894	90.7 1939	38.9 1931	16.7 1945	153.9 1909	37.8 1926	16.7 1890	101.6 1891
Bangalore Aerodrome	31.2 1959	10.2 1962	13.0 1958	34.4 1959	11.0 1963	28.5 1950	36.6 1959	11.7 1950	18.5 1954	38.3 1960	17.0 1963	58.9 1953	37.1 1960	13.7 1949	68.6 1952	35.6 1953	16.7 1950	70.6 1949
Mysore	32.8 1936	11.1 1953	26.4 1926	36.1 1931	12.2 1946	59.4 1917	37.8 1931	13.3 1933	47.5 1923	39.4 1917	16.1 1918	133.3 1921	37.8 1936	15.6 1904	184.4 1957	37.2 1926	15.0 1936	68.6 1915
Kerala																		
Calicut	35.6 1952	17.2 1913	104.4 1909	35.6 1952	16.1 1925	150.1 1945	35.0 1954	19.4 1896	83.3 1936	37.2 1936	21.1 1938	143.3 1899	37.2 1920	20.0 1937	268.5 1932	34.3 1962	20.6 1956	250.2 1941
Palghat	36.4 1958	15.6 1946	31.5 1948	38.9 1959	18.8 1960	29.7 1952	41.4 1959	20.4 1959	78.7 1948	41.7 1950	20.4 1959	90.4 1954	40.8 1959	20.6 1955	236.2 1957	35.6 1948	20.6 1956	108.8 1961
Fort Cochin	33.6 1962	17.8 1929	133.3 1921	34.9 1960	19.4 1932	105.4 1899	34.3 1962	21.1 1954	125.8 1960	34.4 1962	21.7 1943	160.5 1956	34.6 1959	21.1 1939	253.2 1933	32.7 1958	20.6 1935	185.4 1900
Cochin (Naval Air Station)	34.3 1962	18.5 1962	37.1 1960	34.5 1960	19.0 1963	73.7 1956	34.8 1961	21.6 1959	66.8 1960	34.7 1961	21.1 1962	177.0 1956	34.6 1959	22.2 1958	189.3 1961	32.8 1958	21.0 1962	170.5 1958
Alleppey	35.0 1959	18.3 1957	86.9 1951	36.6 1963	18.7 1963	65.2 1959	36.7 1949	21.1 1955	69.9 1947	36.0 1961	21.1 1948	274.3 1950	35.6 1959	20.6 1955	146.8 1960	34.4 1948	21.1 1956	227.3 1948
Punalur	36.6 1959	15.7 1957	44.5 1958	37.8 1959	15.8 1959	37.2 1962	39.3 1959	17.9 1957	39.9 1958	37.9 1959	20.2 1957	81.4 1963	37.1 1957	21.3 1959	120.2 1961	34.3 1962	21.2 1962	165.0 1961
Trivandrum	35.5 1950	18.9 1950	63.7 1962	35.0 1955	18.9 1946	108.2 1962	36.2 1959	20.6 1956	78.7 1954	35.3 1960	20.3 1962	129.8 1937	35.2 1957	21.2 1960	277.9 1926	34.4 1953	20.0 1956	154.7 1944
Trivandrum Aerodrome	33.9 1953	17.7 1962	60.8 1961	33.4 1959	18.3 1956	83.2 1959	35.0 1956	20.0 1961	43.2 1958	34.4 1956	20.8 1962	82.3 1956	34.5 1959	21.6 1962	100.8 1960	32.9 1959	21.1 1956	146.4 1961

July			August			September			October			November			December			Based on data from		Sub-division and Station
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Tem-perature	Rain-fall	
Madras State—Contd.																				
38.0 1963	23.0 1961	18.2 1961	37.2 1963	23.0 1962	44.4 1962	36.2 1961	22.3 1962	34.6 1962	35.4 1961	21.8 1961	86.0 1962	32.8 1963	19.5 1961	67.0 1962	32.0 1962	19.0 1961	222.6 1963	1961	1961	Atirampattinam
40.6 1884	19.4 1891	124.5 1893	40.0 1891	20.6 1912	112.3 1910	39.4 1928	20.0 1908	154.2 1946	38.3 1934	18.9 1911	128.8 1909	36.1 1948	17.2 1909	169.7 1921	35.0 1951	16.7 1920	165.6 1955	1881	1881	Madurai
38.4 1960	21.7 1960	53.0 1960	38.7 1959	21.9 1962	61.0 1962	37.2 1959	22.2 1962	51.6 1959	37.3 1959	21.0 1961	68.4 1963	32.6 1962	19.7 1962	76.3 1959	31.8 1960	17.5 1963	33.2 1963	1959	1959	Madurai Aerodrome.
38.2 1962	22.1 1960	24.5 1960	37.4 1962	23.2 1963	39.0 1963	38.2 1960	22.5 1962	77.0 1962	37.0 1960	22.0 1961	99.4 1961	31.9 1960	20.6 1961	63.0 1961	31.9 1960	20.1 1963	45.4 1963	1960	1960	Tondi.
35.0 1921	21.7 1957	130.8 1916	35.1 1963	22.2 1954	73.9 1937	35.0 1940	20.6 1930	108.5 1901	35.0 1940	21.1 1891	133.6 1932	33.3 1944	21.6 1957	137.7 1896	33.9 1906	18.9 1953	218.7 1955	1891	1891	Pamban.
37.9 1958	23.0 1962	21.1 1954	37.8 1957	21.2 1959	22.6 1962	37.9 1963	23.9 1955	12.2 1955	37.6 1959	21.6 1961	167.4 1957	34.4 1955	19.7 1959	134.6 1956	31.7 1955	19.4 1963	188.2 1955	1954	1954	Tuticorin.
38.4 1963	22.5 1959	34.3 1949	38.9 1953	22.4 1959	57.0 1958	40.0 1952	22.3 1954	40.6 1946	38.3 1963	21.2 1961	79.4 1961	36.4 1959	21.0 1961	95.7 1960	35.6 1960	20.0 1956	84.6 1963	1950	1945	Palayankottai.
34.1 1963	21.7 1961	41.3 1961	33.8 1962	22.1 1962	99.0 1963	33.4 1963	21.3 1962	23.0 1962	34.2 1963	22.5 1962	105.4 1962	32.6 1963	21.5 1963	124.0 1963	32.3 1962	21.4 1962	42.0 1963	1961	1961	Kanniyakumari.
Coastal Mysore																				
31.4 1960	21.1 1953	223.6 1961	30.2 1963	21.7 1955	136.7 1955	30.6 1955	21.1 1951	128.4 1960	35.9 1960	18.3 1952	175.3 1954	36.3 1962	15.6 1952	71.6 1955	36.0 1960	14.4 1956	49.2 1962	1952	1952	Karwar.
32.2 1949	20.6 1963	270.0 1959	31.3 1957	19.4 1955	160.3 1962	31.2 1951	20.9 1963	127.5 1954	37.2 1950	18.3 1950	132.1 1944	36.7 1941	15.6 1950	65.8 1957	37.2 1949	16.1 1945	25.1 1947	1939	1939	Honavar.
30.5 1960	21.0 1961	231.2 1959	30.0 1960	20.9 1957	146.2 1962	31.1 1963	20.9 1961	95.5 1959	34.0 1960	20.9 1960	113.8 1963	34.3 1959	19.0 1957	72.2 1960	34.6 1957	16.3 1960	69.4 1959	1957	1957	Mangalore (Baipce)
35.6 1959	20.6 1931	268.2 1900	32.2 1932	19.4 1963	232.4 1931	31.7 1955	21.1 1959	184.7 1900	35.0 1963	19.6 1961	181.6 1913	35.6 1941	17.2 1909	112.1 1958	35.6 1909	16.7 1950	153.2 1933	1911	1881	Mangalore.
Interior Mysore North																				
36.1 1924	11.1 1900	245.9 1955	36.1 1924	9.4 1900	144.3 1947	36.7 1924	8.9 1913	203.2 1949	36.7 1901	8.3 1900	128.3 1903	36.1 1918	6.1 1900	138.4 1895	32.3 1923	2.3 1918	81.8 1906	1896	1896	Bidar.
33.1 1913	17.2 1920	108.5 1897	37.3 1899	18.3 1920	100.3 1910	37.2 1926	17.3 1954	147.3 1923	37.8 1899	10.0 1905	147.3 1893	35.6 1940	7.8 1945	64.3 1943	34.4 1920	5.6 1945	66.5 1906	1891	1891	Gulbarga.
36.1 1901	16.1 1962	102.1 1953	35.6 1902	16.7 1906	121.2 1954	36.7 1896	16.1 1901	143.8 1949	37.2 1896	12.2 1897	102.4 1958	35.0 1896	8.3 1904	113.0 1922	33.4 1963	6.7 1897	34.5 1942	1896	1896	Bijapur.
38.1 1915	17.3 1899	137.2 1959	37.3 1915	17.2 1903	107.7 1914	38.1 1897	17.2 1924	130.8 1949	37.2 1920	15.6 1943	158.7 1916	35.0 1920	11.7 1924	87.6 1919	36.1 1899	10.0 1945	52.1 1903	1891	1896	Raichur.
30.3 1962	17.3 1955	162.6 1958	29.9 1958	17.3 1956	110.0 1956	32.3 1962	16.3 1957	71.8 1959	34.0 1962	14.2 1962	82.5 1955	33.0 1958	9.4 1953	41.2 1957	34.6 1960	8.9 1956	19.4 1962	1955	1955	Belgaum.
31.9 1960	18.3 1956	112.0 1958	29.3 1962	15.6 1956	86.4 1956	31.0 1963	16.0 1957	59.8 1959	32.0 1963	13.9 1954	91.4 1957	31.0 1963	10.6 1955	66.9 1962	32.6 1963	7.8 1954	21.7 1962	1952	1952	Belgaum (Samra).
34.9 1960	18.9 1934	54.4 1932	34.4 1948	18.7 1957	80.0 1957	37.3 1951	17.2 1952	136.4 1960	34.7 1959	15.6 1950	171.5 1947	37.2 1947	12.2 1939	82.0 1956	34.1 1959	11.7 1943	56.4 1933	1931	1931	Gadag.
Interior Mysore South																				
38.3 1915	19.4 1930	102.9 1953	37.3 1883	19.4 1933	105.7 1950	37.3 1913	19.4 1919	127.5 1956	38.9 1886	15.0 1889	111.3 1904	37.6 1957	11.7 1910	162.1 1903	35.6 1913	10.6 1926	65.0 1962	1881	1881	Bellary.
34.4 1932	19.9 1961	114.8 1910	32.3 1922	18.4 1957	109.2 1919	35.0 1905	15.0 1910	95.5 1933	33.9 1905	15.6 1943	132.1 1930	32.8 1931	8.3 1945	87.4 1925	32.8 1930	3.2 1945	109.2 1933	1896	1896	Chitradurga.
32.4 1960	16.6 1963	111.0 1953	30.4 1958	16.1 1954	49.8 1953	33.3 1951	16.1 1952	45.7 1950	32.4 1960	11.7 1952	105.6 1960	33.3 1953	8.3 1950	55.1 1956	32.2 1963	8.9 1951	43.4 1952	1950	1950	Shimoga.
27.0 1962	17.4 1963	618.0 1963	26.3 1962	16.2 1962	195.4 1962	27.4 1962	15.2 1963	132.0 1962	30.0 1962	14.8 1963	91.0 1962	29.6 1963	10.7 1962	26.0 1962	30.8 1963	8.6 1963	91.0 1962	1962	1962	Agumbe.
28.9 1945	13.9 1955	219.2 1953	29.4 1947	16.1 1951	179.8 1949	30.6 1936	13.3 1935	83.3 1955	29.6 1963	12.8 1952	111.8 1960	29.5 1963	10.0 1934	55.9 1932	30.3 1945	8.3 1937	56.9 1937	1931	1931	Balchonnur.
31.1 1905	15.0 1918	82.5 1929	31.1 1932	15.6 1925	79.8 1897	32.2 1905	13.9 1906	104.0 1959	32.2 1905	11.7 1960	163.2 1958	31.1 1927	8.3 1904	115.8 1925	31.1 1926	6.7 1907	80.8 1906	1896	1896	Hassan.
33.3 1914	16.1 1882	105.4 1949	33.3 1889	14.4 1889	162.1 1890	33.3 1951	15.0 1883	124.7 1912	32.2 1934	13.3 1889	116.8 1935	31.1 1923	10.6 1889	114.5 1916	31.1 1926	8.9 1883	67.3 1941	1881	1881	Bangalore.
32.3 1960	16.1 1953	66.3 1952	31.1 1958	15.0 1948	79.6 1960	32.8 1951	15.6 1954	95.8 1958	32.1 1958	14.4 1950	169.2 1953	31.7 1953	11.7 1950	83.6 1957	30.1 1957	10.4 1960	20.8 1952	1948	1948	Bangalore Aerodrome.
33.3 1899	15.8 1961	71.6 1918	33.9 1899	16.7 1928	95.3 1910	33.3 1936	15.0 1906	129.3 1940	32.8 1905	13.9 1917	112.7 1963	32.2 1918	11.1 1901	105.2 1915	31.7 1923	10.6 1945	78.5 1952	1896	1896	Mysore.
Kerala																				
32.2 1931	21.1 1956	264.2 1922	32.2 1953	20.6 1950	204.5 1924	33.9 1952	21.1 1954	179.1 1955	34.4 1897	20.0 1917	204.0 1962	34.4 1929	16.1 1901	192.3 1925	34.8 1957	16.1 1895	115.1 1942	1891	1881	Calicut.
32.6 1960	20.6 1962	107.7 1949	31.7 1947	20.6 1946	109.5 1956	35.6 1955	20.6 1954	94.0 1962	35.0 1945	20.6 1954	95.4 1959	35.6 1952	17.2 1954	65.3 1948	34.5 1958	16.7 1945	89.7 1946	1943	1943	Palghat.
32.1 1961	21.1 1943	213.9 1910	32.2 1929	21.1 1946	155.7 1947	31.1 1955	21.1 1950	111.8 1936	32.2 1930	21.1 1943	236.2 1884	32.8 1953	19.4 1944	121.4 1920	34.4 1961	19.4 1945	134.7 1946	1926	1881	Fort Cochin.
32.2 1960	20.6 1956	147.2 1962	30.7 1963	21.6 1958	143.3 1960	31.4 1963	21.6 1961	90.0 1961	34.1 1957	21.9 1963	138.2 1957	33.0 1963	20.9 1963	69.9 1957	34.2 1957	1.8.8 1959	50.6 1959	1956	1956	Cochin (Naval Air Station.)
31.7 1953	20.6 1950	150.6 1949	31.7 1949	21.1 1948	139.2 1947	32.2 1951	21.7 1961	215.0 1962	32.8 1946	21.1 1950	163.1 1945	34.4 1949	20.6 1954	132.3 1945	35.0 1951	17.8 1944	82.5 1947	1944	1944	Alleppey.
32.9 1958	20.8 1963	88.6 1957	32.8 1962	21.2 1961	84.8 1963	34.3 1957	19.4 1957	87.4 1962	34.9 1959	18.3 1960	164.6 1960	34.5 1961	17.4 1957	129.2 1960	34.4 1962	16.6 1960	49.1 1957	1957	1957	Punalur.
31.7 1956	21.1 1959	151.6 1910	32.8 1953	20.6 1946	102.4 1932	33.3 1946	21.1 1950	125.5 1907	33.3 1940	21.1 1950	215.9 1908	34.3 1961	18.9 1944	162.8 1948	34.4 1955	18.9 1945	148.8 1919	1931	1899	Trivandrum.
32.2 1956	20.2 1959	135.2 1959	32.4 1960	21.1 1955	55.6 1958	32.8 1955	21.6 1962	116.8 1955	31.7 1957	21.7 1955	106.2 1962	33.3 1961	20.6 1954	114.8 1955	32.8 1957	18.3 1955	41.7 1955	1954	1954	Trivandrum Aerodrome.

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
Arabian Sea Islands																		
Amini	36.7 1950	18.9 1912	74.2 1918	35.7 1959	19.4 1923	18.0 1902	37.2 1950	20.6 1950	32.0 1923	37.7 1960	20.0 1923	121.9 1901	36.2 1963	21.7 1941	161.0 1934	35.9 1958	21.1 1930	211.1 1909
Minicoy	32.8 1943	17.8 1953	126.2 1926	32.2 1948	17.2 1946	83.0 1961	32.8 1941	19.4 1955	54.6 1936	35.6 1942	21.7 1959	121.2 1950	36.7 1952	21.7 1956	238.5 1949	33.9 1935	21.5 1962	148.6 1926
Hill Stations Excluding Kashmir																		
Dalhousie	21.7 1952	-5.0 1953	134.6 1950	29.4 1953	-8.0 1963	134.6 1949	30.7 1959	-0.6 1958	149.6 1959	29.8 1959	1.1 1955	112.3 1951	33.3 1952	6.7 1959	35.9 1955	35.5 1960	3.9 1952	99.5 1960
Dharamsala	21.7 1962	-0.5 1960	76.4 1959	25.0 1953	-1.6 1961	65.0 1954	28.3 1959	3.4 1960	73.2 1963	35.3 1958	7.2 1960	52.8 1957	36.7 1962	11.4 1951	74.9 1956	38.3 1958	14.5 1957	83.2 1959
Simla	18.9 1949	-10.6 1945	78.7 1888	20.6 1953	-8.3 1950	63.5 1908	23.9 1945	-5.6 1935	61.0 1901	28.3 1941	-1.4 1960	49.6 1890	30.0 1941	4.4 1924	97.2 1883	39.6 1932	7.8 1922	122.2 1906
Dharmpur	..	..	105.2 1961	..	..	111.0 1961	..	..	104.1 1955	..	..	78.7 1957	..	..	36.9 1957	..	..	91.4 1953
Lokpal	14.0 1957	-16.1 1955	77.5 1955	0 1956	-13.9 1957	75.0 1959	-0.7 1962	-11.7 1961	60.4 1963	3.4 1961	-11.1 1957	34.3 1957	10.0 1956	0.1 1965	38.6 1957	11.7 1960	-3.3 1955	37.6 1960
Badrinath	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22.0 1960	6.1 1960	26.0 1958
Joshihati	18.2 1961	-4.4 1960	57.0 1961	21.1 1962	-3.9 1951	54.8 1959	24.9 1959	-7.5 1960	52.6 1962	27.8 1961	1.7 1959	36.9 1963	31.1 1960	9.1 1962	21.5 1961	32.5 1961	11.3 1962	55.8 1960
Mussoorie	21.1 1949	-5.0 1935	90.9 1945	23.3 1953	-0.6 1962	82.0 1949	26.1 1945	-2.5 1960	62.0 1944	28.9 1956	-0.6 1942	53.2 1949	44.3 1949	5.6 1947	70.0 1943	31.7 1955	4.1 1962	134.9 1936
Mukteswar (Kumaon)	19.4 1910	-6.1 1953	81.3 1945	23.9 1953	-7.8 1905	70.5 1905	25.0 1908	-3.3 1907	67.8 1914	27.8 1956	-1.7 1937	49.0 1949	29.4 1956	1.3 1920	71.4 1916	30.2 1961	6.7 1903	220.7 1921
Nainital	18.4 1950	-5.6 1953	77.5 1953	21.7 1953	-3.9 1961	72.0 1961	21.7 1958	-1.7 1962	70.0 1962	26.4 1960	3.9 1957	55.6 1953	27.3 1956	5.9 1963	208.3 1936	28.3 1953	11.1 1957	141.2 1936
Kalimpong	26.2 1961	0.6 1945	40.6 1957	26.2 1961	3.3 1945	45.0 1940	27.8 1923	4.5 1962	50.8 1962	30.6 1939	3.3 1944	69.6 1943	30.9 1960	10.0 1955	122.3 1938	31.1 1960	13.4 1954	302.0 1950
Darjeeling	18.9 1952	-3.9 1953	134.6 1957	17.2 1955	-5.0 1960	42.9 1940	23.3 1955	-0.6 1963	72.9 1951	26.7 1910	1.1 1945	15.1 1916	23.9 1916	5.6 1959	232.9 1887	26.7 1902	8.4 1938	451.1 1950
Kohima	19.6 1959	4.5 1962	1.6 1957	33.1 1963	3.8 1959	19.6 1962	29.1 1959	7.1 1957	36.1 1953	32.2 1956	9.4 1957	55.6 1955	33.9 1959	12.1 1953	74.9 1956	29.5 1959	15.0 1955	195.0 1957
Shillong	21.1 1944	-2.8 1937	52.3 1957	24.4 1952	-2.8 1950	41.1 1914	28.9 1924	-0.6 1966	189.5 1929	30.0 1954	6.7 1946	117.9 1942	30.7 1960	7.7 1961	169.7 1914	29.1 1958	11.7 1950	145.5 1934
Cherrapunji	26.7 1913	0 1913	85.3 1929	28.9 1913	0.6 1950	91.9 1907	30.6 1913	0.6 1912	306.1 1910	28.3 1938	3.9 1941	92.3 1922	30.2 1962	3.3 1947	812.0 1916	29.2 1962	9.2 1963	97.3 1936
Abu	26.3 1961	-1.1 1929	37.9 1888	28.9 1960	0 1950	40.6 1906	31.3 1892	3.9 1945	27.2 1927	36.9 1958	10.0 1926	27.4 1959	34.7 1962	11.1 1892	92.7 1917	38.3 1897	13.9 1940	343.1 1945
Aijal	23.0 1954	3.9 1945	42.4 1945	27.8 1960	3.9 1950	37.6 1959	32.1 1963	5.6 1947	102.9 1959	33.3 1938	10.6 1953	76.2 1951	33.1 1960	10.0 1961	131.3 1958	31.1 1938	9.4 1944	172.2 1962
Pachmarhi	27.8 1946	-1.1 1935	94.2 1957	31.7 1953	-0.6 1929	52.1 1928	36.1 1892	3.3 1906	55.1 1936	40.0 1942	8.9 1965	38.6 1955	40.6 1951	15.0 1943	55.3 1943	40.6 1931	15.6 1931	201.9 1916
Mahabaleshwar	28.9 1930	6.1 1945	22.1 1943	31.4 1961	3.9 1942	29.0 1938	33.9 1953	9.4 1940	34.2 1962	36.1 1934	11.1 1955	95.0 1947	35.7 1961	15.9 1953	57.9 1956	32.2 1955	11.3 1943	362.7 1961
Mercara	31.7 1954	9.4 1946	30.0 1906	31.7 1911	8.9 1936	31.7 1950	35.3 1921	10.6 1955	55.4 1928	33.9 1896	10.6 1955	67.6 1945	35.0 1962	9.4 1955	174.0 1909	30.0 1959	10.0 1955	266.4 1961
Ootacamund	24.5 1962	-1.7 1921	114.8 1909	26.7 1945	0 1953	51.6 1917	25.6 1949	3.9 1959	96.2 1958	27.2 1942	5.0 1959	84.1 1947	26.7 1941	4.1 1917	181.4 1955	25.0 1914	5.0 1958	133.1 1941
Coonoor	25.6 1942	1.7 1946	196.6 1943	26.7 1945	2.8 1939	207.5 1936	26.7 1943	5.0 1949	157.3 1951	27.8 1956	8.9 1944	179.4 1960	29.4 1951	11.0 1959	193.9 1957	27.8 1953	9.4 1936	97.3 1939
Kodaikanal	24.4 1916	2.8 1950	194.8 1913	24.4 1914	4.0 1963	158.7 1925	26.7 1926	4.4 1955	106.7 1947	26.1 1925	8.2 1958	123.7 1955	27.8 1925	7.8 1955	131.1 1955	25.0 1915	5.0 1912	69.5 1947
Nepal																		
Katmandu	25.0 1946	-2.8 1955	45.9 1962	26.3 1922	-1.1 1931	30.7 1961	33.3 1938	1.1 1948	47.2 1943	37.2 1954	4.4 1945	43.4 1949	37.5 1957	6.7 1960	55.6 1956	37.8 1958	13.2 1958	103.5 1950
Sikkim																		
Lachen	18.9 1958	-9.7 1961	66.0 1957	18.9 1958	-8.3 1961	30.5 1959	18.9 1960	-6.7 1958	43.2 1956	20.6 1962	-5.6 1958	30.5 1955	21.1 1963	0.6 1958	64.4 1963	22.2 1961	5.6 1958	45.7 1957
HYDROMETEOROLOGICAL OBSERVATORIES Damodar Catchment																		
Tilaiya	30.4 1958	3.3 1962	55.4 1957	31.8 1958	6.9 1960	27.0 1961	38.0 1958	10.1 1957	34.0 1960	41.2 1961	17.0 1959	21.8 1962	43.8 1962	19.6 1963	28.4 1961	43.7 1958	20.3 1961	69.6 1957
Hazaribagh	26.9 1961	-2.4 1962	39.1 1959	30.4 1960	4.1 1961	26.6 1961	35.9 1959	9.7 1962	15.0 1963	40.2 1961	15.0 1959	14.8 1962	42.0 1962	17.8 1963	31.2 1961	41.2 1960	18.9 1961	169.6 1961
Konar	..	..	11.3 1963	..	..	38.6 1961	..	..	9.6 1962	..	..	26.0 1963	..	..	43.4 1961	..	..	41.2 1962
Bokaro	31.8 1958	1.8 1962	49.5 1953	35.0 1952	2.2 1950	47.0 1961	41.1 1955	8.2 1957	30.5 1957	43.4 1961	14.3 1957	46.2 1951	45.1 1962	17.2 1951	45.7 1958	45.6 1958	21.1 1963	70.9 1950
Maithon	29.4 1960	5.4 1962	27.2 1961	34.7 1960	8.1 1960	64.3 1961	39.1 1960	12.2 1962	1.4 1957	44.7 1960	16.1 1963	15.0 1962	45.8 1960	19.9 1963	31.6 1962	45.5 1961	20.6 1960	103.5 1963
Rangah	33.0 1958	2.2 1955	25.7 1953	35.6 1952	4.8 1957	54.0 1961	41.1 1957	7.8 1962	23.2 1962	43.9 1956	13.9 1953	41.0 1959	46.1 1956	19.4 1963	76.4 1959	46.1 1955	20.6 1960	140.0 1961
Panchet Hills	32.2 1958	6.7 1955	41.7 1954	34.9 1958	8.9 1956	53.4 1961	41.1 1955	12.2 1954	24.4 1958	48.8 1961	16.4 1957	23.8 1962	46.9 1961	20.6 1956	63.2 1962	46.1 1958	22.2 1953	90.9 1957
Durgapur	31.7 1958	6.1 1963	14.7 1957	36.3 1963	8.4 1961	63.5 1959	40.0 1958	11.7 1962	22.0 1960	45.0 1961	17.2 1963	14.5 1959	45.8 1958	18.6 1963	60.5 1960	46.4 1958	16.1 1961	132.1 1957

July			August			September			October			November			December			Based on data from		Sub-division and Station		
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temperature	Rain-fall			
33.3 1945	21.7 1910	180.3 1907	33.3 1950	22.2 1915	244.3 1909	31.9 1910	21.7 1950	217.7 1915	35.9 1958	20.6 1928	135.4 1961	35.0 1949	18.3 1910	88.9 1932	35.1 1960	18.9 1908	119.4 1925	1896	1896	Arabian Sea Islands		
31.7 1953	21.1 1928	154.9 1929	31.7 1934	21.1 1914	200.7 1930	32.2 1937	21.7 1954	107.7 1916	33.3 1931	19.4 1945	128.3 1910	32.5 1961	17.2 1942	132.1 1907	32.2 1957	18.3 1955	187.5 1898	1896	1896	Amiri, Minicoy.		
32.8 1953	8.4 1919	232.6 1957	27.0 1962	11.7 1957	243.2 1959	27.0 1963	8.0 1963	274.0 1959	27.9 1961	-2.2 1959	287.0 1955	25.7 1958	0.1 1960	97.8 1957	23.9 1952	-8.0 1962	174.2 1960	1947	1947	Hill Stations Excluding Kashmir		
33.1 1957	16.7 1955	262.3 1959	29.5 1957	16.2 1957	316.9 1956	29.4 1951	11.2 1962	257.2 1959	28.3 1953	8.9 1961	196.9 1955	24.7 1958	5.1 1962	46.8 1963	22.2 1953	1.7 1961	72.6 1963	1951	1951	Dalhousie, Dharmasala, Simla, Dhampur, Lokpal, Badrinath, Joshiath, Mussoorie, Mukteswar (Kumaun) Nainital, Kalimpong, Darjeeling, Kohima, Shillong, Cherrapunji, Abu, Ajaj, Pachmarhi, Mahabaleshwar, Mecara, Ootacamund, Coonoor, Kodaikanal		
28.9 1961	16.0 1912	167.1 1922	27.3 1951	10.6 1957	177.1 1961	27.3 1946	5.0 1946	158.0 1962	23.9 1938	0.2 1961	113.0 1961	21.1 1952	-1.1 1911	68.8 1894	20.4 1963	-12.2 1963	76.5 1923	1896	1881			
..	..	117.5 1952	165.1 1953	213.4 1955	199.4 1956	130.8 1951	31.0 1958	1947		
13.1 1963	1.7 1956	77.4 1906	12.3 1962	3.2 1956	75.2 1962	10.9 1959	1.5 1963	57.4 1951	8.9 1960	-7.3 1954	66.0 1956	8.9 1952	-10.0 1962	60.4 1962	2.2 1952	-16.7 1952	100.0 1961	1951	1951			
28.0 1958	16.0 1958	121.1 1958	21.7 1959	7.4 1959	25.9 1959	17.3 1958	6.1 1958	22.7 1958	16.1 1959	1.1 1959	25.0 1960	13.9 1958	..	..	..	..	..	1958	1958
3.1 1962	11.6 1963	91.1 1962	21.9 1959	6.5 1963	27.3 1963	17.3 1963	10.3 1963	51.4 1963	25.6 1961	1.8 1961	40.4 1961	25.1 1962	1.2 1960	35.0 1962	20.0 1960	-2.4 1961	70.0 1961	1959	1959			
29.4 1949	12.2 1959	96.9 1942	23.9 1957	7.1 1963	46.3 1941	23.2 1946	1.3 1963	199.6 1947	25.6 1951	2.6 1961	193.1 1956	25.0 1952	-2.1 1960	72.2 1963	31.7 1953	-3.9 1954	111.0 1957	1926	1926			
13.6 1961	9.4 1959	59.5 1907	26.1 1953	11.1 1959	104.7 1948	25.6 1956	6.7 1960	251.5 1914	25.0 1909	1.7 1913	182.4 1910	23.1 1962	-1.1 1918	45.2 1927	21.7 1944	-5.0 1954	90.7 1954	1901	1901			
26.1 1951	14.1 1963	23.5 1957	25.1 1957	11.8 1956	166.9 1963	21.9 1959	1.1 1962	113.7 1957	22.6 1960	4.4 1961	300.7 1956	21.2 1962	0.6 1963	16.0 1957	21.2 1957	-3.3 1961	153.7 1957	1953	1953			
13.0 1961	11.3 1960	53.8 1939	30.9 1957	10.9 1955	100.0 1963	39.2 1961	13.1 1962	206.0 1929	31.1 1960	3.9 1944	206.3 1929	30.0 1963	3.9 1963	50.8 1963	27.3 1963	-0.6 1963	29.0 1934	1921	1926			
13.3 1959	3.9 1944	88.0 1959	26.1 1957	3.3 1946	17.1 1948	26.7 1900	10.0 1949	192.3 1899	23.3 1962	3.4 1913	331.5 1929	22.2 1913	-0.6 1951	219.7 1912	20.0 1947	-1.7 1905	31.2 1885	1891	1881			
28.3 1962	15.4 1961	71.9 1951	19.6 1957	17.1 1962	13.9 1962	27.3 1963	15.4 1963	95.3 1953	27.2 1956	11.6 1963	81.8 1954	24.5 1957	7.7 1961	68.8 1955	19.5 1958	4.3 1961	7.6 1961	1952	1952			
33.3 1952	15.0 1956	85.7 1952	29.2 1957	11.3 1952	113.1 1956	28.1 1963	1.7 1960	356.2 1960	27.2 1938	5.6 1921	296.2 1946	25.6 1943	1.1 1937	96.0 1950	22.8 1918	-1.7 1929	41.1 1926	1906	1906			
21.4 1963	11.7 1910	138.2 1916	29.2 1957	12.8 1943	68.7 1942	28.9 1906	12.8 1955	612.2 1951	29.9 1962	10.0 1947	590.5 1919	26.7 1915	6.7 1946	332.2 1917	23.2 1951	3.3 1913	189.7 1926	1906	1906			
13.8 1959	13.0 1962	600.2 1943	11.1 1893	11.3 1962	111.5 1941	11.2 1964	11.1 1962	169.1 1950	31.7 1944	10.6 1947	148.1 1917	28.9 1929	6.1 1938	43.7 1896	27.3 1941	-0.6 1929	25.4 1898	1881	1881			
13.6 1945	11.4 1941	133.6 1946	29.7 1963	12.3 1946	117.4 1941	29.4 1963	11.9 1963	136.1 1938	29.3 1958	8.9 1947	236.0 1959	28.3 1943	7.8 1960	86.0 1960	26.7 1947	5.6 1947	57.9 1945	1938	1938			
27.4 1960	16.1 1941	133.3 1882	39.1 1959	15.0 1959	158.7 1955	27.6 1961	12.8 1940	176.2 1961	11.7 1920	6.7 1933	164.1 1955	28.3 1957	2.2 1912	99.1 1912	27.8 1941	-1.1 1926	63.0 1885	1881	1881			
21.2 1962	11.8 1957	311.2 1953	26.7 1950	11.9 1956	189.9 1956	27.3 1953	12.2 1953	327.1 1950	39.6 1957	16.7 1961	277.5 1961	29.2 1963	10.0 1955	148.6 1948	29.2 1963	8.3 1940	40.7 1940	1931	1929			
38.9 1955	11.2 1958	584.5 1924	26.1 1963	12.2 1920	191.6 1934	27.2 1951	12.2 1955	193.4 1933	28.3 1899	10.6 1948	151.6 1887	27.8 1918	10.6 1947	86.4 1925	28.9 1903	9.4 1937	85.9 1902	1891	1881			
21.5 1963	6.7 1963	192.4 1962	21.5 1963	5.7 1957	66.3 1969	22.3 1951	4.4 1958	65.3 1951	22.0 1963	0 1913	102.4 1916	24.4 1961	-1.1 1949	209.8 1939	24.5 1960	-1.1 1947	152.9 1941	1901	1901			
25.0 1952	11.1 1955	166.0 1966	14.1 1944	3.7 1953	70.6 1963	24.4 1954	8.9 1955	73.1 1955	25.6 1941	6.1 1933	139.9 1938	24.4 1938	3.3 1942	163.1 1948	25.6 1941	2.2 1956	228.6 1952	1931	1931			
21.2 1918	8.9 1910	7.0 1924	22.9 1913	3.3 1913	13.9 1913	21.7 1958	3.9 1907	191.1 1914	21.1 1914	6.1 1935	147.1 1930	21.7 1927	3.9 1901	197.1 1948	22.3 1910	2.8 1922	133.1 1903	1901	1901			
22.8 1917	16.1 1928	167.4 1954	11.1 1939	16.1 1954	101.6 1945	35.3 1938	13.1 1963	71.4 1936	33.3 1938	5.6 1934	74.9 1961	29.4 1931	0.1 1962	28.5 1948	28.3 1917	-2.8 1954	15.2 1937	1914	1935			
21.7 1959	6.1 1958	85.0 1959	21.4 1961	6.1 1958	57.9 1962	22.2 1960	-0.6 1958	91.3 1960	19.7 1962	0.3 1962	58.0 1959	15.6 1959	-2.5 1961	32.2 1962	14.4 1960	-6.4 1961	39.5 1954	1958	1951			
33.8 1962	20.0 1958	105.4 1959	34.7 1957	22.1 1957	156.2 1957	36.9 1960	21.1 1963	135.8 1963	33.6 1960	14.0 1957	190.6 1961	30.7 1958	9.4 1960	8.0 1963	28.8 1957	4.4 1961	4.8 1961	1957	1957			
35.6 1962	21.6 1960	86.2 1962	31.3 1963	21.9 1961	69.0 1961	31.9 1963	9.3 1962	151.8 1963	30.4 1963	12.8 1961	160.6 1963	28.9 1962	7.6 1962	2.0 1963	27.4 1963	0.3 1961	11.0 1961	1959	1959			
..	..	46.2 1962	39.6 1962	152.4 1963	98.6 1963	2.5 1963	13.6 1962	1961		
37.9 1962	21.1 1958	216.1 1953	35.2 1957	22.2 1953	106.9 1953	35.2 1963	18.9 1950	148.3 1958	35.2 1957	11.7 1954	122.0 1959	33.9 1950	5.0 1952	23.4 1953	31.7 1950	2.6 1961	14.0 1952	1950	1950			
37.8 1962	21.7 1963	68.4 1963	36.4 1963	21.7 1960	86.6 1961	36.0 1963	21.2 1963	131.3 1958	36.8 1961	17.5 1963	68.5 1963	33.1 1963	11.3 1961	8.2 1963	31.1 1963	6.4 1961	2.4 1962	1960	1957			
46.5 1961	22.2 1959	88.1 1957	36.4 1958	13.2 1960	169.9 1953	37.2 1960	13.3 1950	174.2 1954	37.8 1956	10.8 1957	108.0 1959	34.2 1957	4.4 1952	17.3 1953	31.6 1961	0.6 1961	56.4 1950	1950	1950			
38.3 1961	21.7 1957	139.0 1953	36.1 1957	21.1 1958	118.0 1963	36.4 1958	19.3 1958	195.1 1956	35.8 1953	15.0 1954	181.6 1959	33.3 1957	9.9 1957	43.2 1955	31.7 1953	5.1 1961	12.5 1954	1950	1950			
37.2 1958	1.1 1961	84.9 1959	37.0 1963	21.7 1962	93.0 1961	35.6 1961	20.4 1963	89.0 1959	35.3 1957	17.2 1963	139.0 1959	33.4 1962	11.1 1962	5.0 1963	31.1 1962	6.0 1962	9.2 1959	1957	1957			
																					HYDROMETEOROLOGICAL OBSERVATORIES Damodar Catchment	
38.8 1962	20.0 1958	105.4 1959	34.7 1957	22.1 1957	156.2 1957	36.9 1960	21.1 1963	135.8 1963	33.6 1960	14.0 1957	190.6 1961	30.7 1958	9.4 1960	8.0 1963	28.8 1957	4.4 1961	4.8 1961	1957	1957	Tilaiya		
35.6 1962	21.6 1960	86.2 1962	31.3 1963	21.9 1961	69.0 1961	31.9 1963	9.3 1962	151.8 1963	30.4 1963	12.8 1961	160.6 1963	28.9 1962	7.6 1962	2.0 1963	27.4 1963	0.3 1961	11.0 1961	1959	1959	Hazaribagh		
..	..	46.2 1962	39.6 1962	152.4 1963	98.6 1963	2.5 1963	13.6 1962	1961		
37.9 1962	21.1 1958	216.1 1953	35.2 1957	22.2 1953	106.9 1953	35.2 1963	18.9 1950	148.3 1958	35.2 1957	11.7 1954	122.0 1959	33.9 1950	5.0 1952	23.4 1953	31.7 1950	2.6 1961	14.0 1952	1950	1950	Bokaro		
37.8 1962	21.7 1963	68.4 1963	36.4 1963	21.7 1960	86.6 1961	36.0 1963	21.2 1963	131.3 1958	36.8 1961	17.5 1963	68.5 1963	33.1 1963	11.3 1961	8.2 1963	31.1 1963	6.4 1961	2.4 1962	1960	1957	Maithon		
46.5 1961	22.2 19																					

Sub-division and Station	January			February			March			April			May			June		
	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R
HYDROMETEOROLOGICAL OBSERVATORIES																		
<i>-Contd.</i>																		
Mahanadi Catchment																		
Ginabahal	31.7 1958	2.2 1962	18.0 1960	35.0 1956	2.2 1959	20.0 1961	40.6 1955	8.9 1957	16.5 1957	43.5 1961	14.4 1957	20.3 1961	45.6 1956	19.9 1962	34.3 1956	45.0 1955	17.7 1959	210.4 1961
Hirakud	32.2 1955	8.7 1962	32.2 1960	36.1 1956	10.0 1956	39.8 1961	42.2 1955	14.9 1957	57.1 1958	45.0 1956	18.7 1957	11.6 1961	46.7 1956	22.2 1955	24.1 1956	46.7 1955	22.7 1960	151.4 1961
Bhimkund	31.3 1958	4.7 1959	13.5 1961	35.3 1960	8.2 1963	40.0 1961	40.1 1959	13.3 1962	55.0 1962	43.9 1959	15.8 1960	44.7 1958	43.8 1962	15.8 1958	47.0 1963	44.9 1958	21.3 1963	73.0 1959
Sonepur	32.2 1955	7.2 1963	15.8 1962	38.3 1955	9.4 1956	38.4 1961	43.1 1963	9.4 1960	26.8 1962	44.7 1961	11.7 1960	19.3 1959	46.1 1956	18.3 1960	49.8 1961	46.7 1955	21.7 1962	142.2 1959
Khijrawan	32.2 1958	5.0 1963	13.4 1960	34.3 1957	5.3 1958	17.0 1962	38.9 1961	11.8 1957	40.9 1957	42.8 1961	17.3 1961	34.3 1957	44.4 1960	20.2 1962	31.7 1957	47.6 1957	21.2 1960	104.0 1959
Narmada Catchment																		
Bagra Tawa	33.3 1961	2.8 1954	31.2 1951	37.8 1953	4.2 1957	15.5 1955	41.7 1953	9.1 1957	25.4 1957	45.3 1958	13.9 1955	14.6 1960	47.2 1954	20.6 1955	29.0 1956	46.1 1953	20.6 1955	88.1 1951
Punasa	40.0 1961	4.2 1962	19.3 1955	40.0 1953	5.9 1961	18.8 1952	43.1 1959	10.7 1957	18.1 1960	47.5 1958	15.0 1954	12.7 1962	48.1 1959	19.4 1954	56.6 1956	47.8 1961	20.6 1960	103.9 1956
Thikri	35.1 1961	5.6 1953	20.3 1953	39.4 1953	2.2 1950	8.4 1949	42.8 1962	9.9 1963	4.2 1963	47.4 1958	15.7 1962	9.0 1959	47.8 1951	22.8 1952	46.0 1960	45.6 1953	20.0 1952	93.5 1953
Sabarmati Catchment																		
Daroi	33.8 1963	3.0 1962	6.9 1958	37.2 1956	4.4 1961	0 ..	41.9 1959	9.6 1957	7.6 1962	46.9 1958	14.4 1956	14.0 1959	46.8 1962	20.2 1961	0 ..	45.6 1963	22.5 1959	104.7 1956
Gandak Catchment																		
Jomosom	19.9 1958	-8.0 1963	45.7 1961	20.0 1958	-8.9 1961	71.1 1961	23.7 1959	-2.7 1962	22.6 1960	25.4 1959	0.3 1963	18.5 1960	26.0 1961	2.8 1962	15.4 1959	27.3 1961	6.5 1958	12.2 1960
Khudi Bazar	..	..	55.4 1962	..	..	31.8 1961	..	..	48.0 1961	..	..	44.2 1963	..	..	39.0 1961	..	..	127.0 1962
Timure	20.1 1961	-0.6 1962	55.1 1962	21.2 1960	0.6 1962	38.1 1961	27.3 1960	0.6 1962	50.8 1963	30.2 1961	5.2 1959	15.0 1962	30.9 1958	10.3 1963	26.7 1959	31.7 1960	13.9 1959	37.3 1961
Pokhara	23.4 1961	3.9 1959	54.9 1957	25.7 1963	4.3 1957	29.5 1961	30.9 1960	7.5 1960	29.7 1960	36.2 1961	10.3 1960	122.2 1958	37.0 1960	13.0 1961	74.2 1959	35.9 1959	15.9 1953	173.7 1959
Gorkha	22.1 1957	5.3 1959	46.2 1957	27.1 1960	4.5 1959	0.6 1960	29.5 1958	8.3 1960	50.0 1960	35.1 1960	7.3 1959	49.5 1959	35.6 1957	13.9 1958	75.4 1950	35.3 1958	17.8 1957	199.7 1959
Nuwakot	23.2 1961	4.7 1962	39.0 1962	27.0 1960	5.4 1961	90.8 1960	32.4 1960	7.7 1960	24.6 1962	36.4 1961	11.4 1960	37.6 1962	38.8 1957	13.8 1958	57.6 1962	38.8 1960	14.3 1957	152.8 1962
Ghaghara Catchment (Trans Himalayan Region)																		
Dailekh	21.1 1958	2.0 1960	36.8 1959	22.7 1960	3.4 1959	17.8 1963	27.3 1958	5.4 1960	52.6 1957	34.3 1960	9.2 1959	72.4 1962	34.3 1957	12.5 1962	27.7 1958	35.1 1958	15.5 1963	53.2 1963
Ghaghara Catchment																		
Dadeldhura	18.9 1959	-2.7 1962	50.3 1958	19.8 1961	-3.4 1961	63.0 1961	24.4 1955	-0.2 1957	70.4 1963	28.8 1959	5.8 1959	42.5 1963	31.6 1958	8.9 1961	33.4 1959	39.5 1961	11.8 1962	59.9 1957
Sallyana	22.9 1963	2.3 1963	99.1 1961	24.3 1963	3.0 1962	20.5 1962	27.0 1962	5.2 1963	45.0 1962	32.5 1961	10.5 1963	32.0 1962	34.4 1961	12.0 1962	22.8 1963	33.2 1961	16.2 1961	84.0 1963
Butwal	27.4 1961	4.6 1958	54.0 1962	30.4 1963	-0.1 1957	33.5 1961	38.1 1960	10.4 1959	50.2 1962	42.2 1961	16.2 1959	40.0 1962	44.7 1960	10.1 1957	72.4 1959	44.4 1958	18.4 1958	171.0 1961
Bagmati Catchment																		
Katmandu*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kosi Catchment																		
Chautara	22.2 1956	2.8 1957	46.5 1957	24.4 1963	1.6 1961	28.4 1961	30.3 1960	5.8 1957	24.1 1953	33.6 1961	8.3 1957	68.6 1962	35.1 1958	11.9 1962	53.2 1960	34.4 1958	14.4 1955	134.8 1962
Chepua	..	..	31.0 1962	..	..	31.0 1961	..	..	31.6 1962	..	..	77.0 1963	..	..	73.0 1963	..	..	62.4 1963
Walungchung Gola	13.3 1961	-7.8 1957	30.5 1956	12.2 1954	-9.6 1961	44.6 1963	16.4 1959	-8.6 1961	114.2 1963	18.6 1961	-2.9 1960	31.4 1963	18.4 1961	1.1 1955	29.2 1963	20.6 1958	1.1 1956	34.4 1961
Taplethok	28.3 1954	0.6 1957	44.7 1957	28.3 1954	3.3 1956	22.9 1957	31.0 1958	5.0 1956	38.3 1953	32.3 1961	8.3 1956	37.6 1958	32.4 1958	11.2 1962	56.4 1956	32.1 1958	15.2 1957	82.0 1959
Bhojpur	18.2 1961	1.4 1957	35.0 1957	21.2 1963	3.9 1959	26.0 1962	27.8 1960	5.9 1957	39.9 1956	29.6 1961	8.7 1957	34.0 1962	29.7 1958	11.2 1959	94.3 1963	28.9 1955	14.8 1957	88.1 1962
Taplejung	19.2 1957	0 1955	34.8 1957	20.6 1956	1.1 1953	14.8 1962	25.6 1953	3.3 1957	37.6 1953	28.9 1961	6.1 1957	71.0 1962	28.3 1957	10.1 1963	55.9 1954	27.7 1961	12.8 1953	68.2 1963
Okhaldhunga	23.9 1953	-0.6 1953	38.2 1962	22.2 1956	-0.8 1959	22.0 1962	25.0 1955	4.1 1962	25.4 1953	28.9 1954	5.8 1957	36.6 1963	29.2 1957	5.6 1953	113.8 1954	29.2 1958	8.9 1953	115.6 1960
Chairpur	22.8 1954	3.1 1957	36.8 1957	26.7 1954	5.0 1953	17.6 1962	30.4 1960	8.4 1960	43.2 1953	33.8 1960	9.3 1957	34.3 1953	34.5 1960	13.3 1955	57.1 1953	32.4 1960	15.6 1957	67.8 1962
Angbung	22.2 1957	1.7 1953	58.0 1959	24.4 1955	3.9 1955	46.4 1962	30.3 1961	5.7 1960	54.0 1959	33.6 1961	8.2 1960	43.2 1953	34.3 1960	8.9 1954	75.7 1953	33.2 1960	7.2 1954	108.0 1962
Barahakshetra	27.3 1961	7.2 1955	48.4 1959	31.7 1963	6.6 1961	39.4 1961	37.1 1960	11.7 1962	126.2 1953	42.2 1954	16.1 1960	102.6 1962	41.9 1957	18.9 1962	103.0 1963	38.9 1958	21.7 1962	155.2 1959
Tista Catchment																		
Gangtok	19.3 1957	-2.2 1956	63.3 1958	20.3 1963	-1.1 1956	26.8 1963	25.8 1960	3.7 1960	61.0 1957	26.0 1962	6.1 1960	178.1 1956	26.5 1960	9.6 1963	109.7 1958	27.1 1963	12.7 1957	125.5 1960
Gezing	21.9 1961	1.1 1957	50.8 1957	23.0 1963	2.1 1961	12.8 1962	28.1 1961	2.1 1957	42.6 1959	30.9 1961	7.3 1957	92.5 1958	30.2 1961	11.5 1963	64.3 1960	30.8 1961	13.6 1957	102.9 1963

*Data included under Nepal.

July			August			September			October			November			December			Based on data from		Sub-division and Station	
X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	X	N	R	Temperature	Rain-fall		
Hydrometeorological Observatories—(Contd.)																					
Mahanadhi Catchment																					
37.2 1958	18.1 1958	96.4 1962	35.0 1957	21.6 1961	198.1 1956	34.5 1957	18.8 1962	131.8 1960	35.8 1963	11.4 1957	178.3 1958	32.6 1957	5.0 1961	9.1 1956	32.2 1959	3.2 1959	12.0 1962	1955	1955	Ginabhar	
38.2 1958	22.2 1955	178.8 1958	35.0 1957	22.6 1962	239.9 1960	34.9 1960	22.8 1963	281.9 1955	36.4 1957	16.8 1960	91.4 1956	32.3 1959	12.4 1960	18.4 1961	31.4 1957	7.2 1955	33.8 1962	1955	1955	Hirakud	
35.9 1962	21.3 1960	150.0 1962	36.1 1961	21.8 1963	229.5 1960	34.4 1958	21.6 1962	157.5 1963	33.3 1960	15.9 1960	87.5 1962	31.9 1963	9.3 1959	11.3 1958	30.8 1960	6.1 1961	1.1 1962	1958	1958	Bhinkund	
37.1 1958	16.1 1957	166.4 1958	37.1 1961	20.5 1957	200.0 1960	35.6 1956	14.7 1957	287.8 1955	35.8 1957	15.1 1958	109.0 1960	33.3 1959	7.7 1959	2.0 1958	32.2 1957	6.9 1959	10.1 1959	1955	1955	Sonepur	
41.9 1957	18.9 1962	153.8 1960	32.5 1958	21.3 1962	102.2 1960	33.1 1963	20.6 1961	100.0 1961	34.4 1957	14.3 1960	114.2 1960	32.1 1963	5.2 1960	16.5 1958	32.1 1963	5.1 1960	14.0 1961	1957	1957	Khijrawan	
Narmada Catchment																					
Bakra Tawa																					
39.4 1962	17.2 1956	281.2 1959	34.4 1954	21.7 1956	141.0 1952	35.1 1960	19.3 1960	259.0 1961	36.3 1957	8.9 1952	48.3 1955	34.5 1963	5.6 1952	42.2 1956	33.4 1960	2.2 1955	21.0 1962	1951	1951	Bakra Tawa	
39.8 1963	20.1 1959	183.6 1959	35.6 1956	20.6 1952	207.0 1960	37.2 1951	14.4 1953	168.4 1961	38.9 1951	10.6 1952	46.2 1961	38.8 1958	6.1 1956	38.8 1963	34.5 1959	3.9 1955	44.0 1962	1951	1951	Punasa	
39.8 1962	20.5 1963	107.9 1950	36.1 1953	20.4 1963	209.8 1957	38.9 1951	15.1 1963	206.0 1959	40.6 1949	11.1 1955	63.0 1961	37.8 1951	6.7 1956	24.2 1963	35.5 1963	5.0 1952	43.3 1962	1949	1949	Thikri	
Sabarmati Catchment																					
Daroi																					
42.2 1963	22.8 1958	299.8 1959	36.1 1957	21.1 1956	105.9 1957	39.3 1960	20.8 1959	208.1 1963	39.1 1957	12.2 1961	64.0 1958	37.2 1957	10.6 1956	33.0 1963	35.0 1963	8.1 1959	0	1956	1956	Daroi	
Gandak Catchment																					
Jomosom																					
27.7 1961	11.9 1962	22.2 1963	30.5 1962	11.1 1960	24.2 1962	28.1 1963	5.6 1958	35.0 1960	24.7 1961	0.6 1960	41.4 1961	23.6 1962	-3.4 1961	4.0 1963	19.8 1960	-10.0 1962	10.3 1962	1958	1958	Jomosom	
..	..	91.0 1963	..	..	100.6 1963	..	..	97.2 1962	..	..	72.0 1962	..	..	27.6 1963	..	..	18.6 1961	..	1961	Khudi Bazaar
..	1958	1958	Timure
31.9 1961	15.8 1960	80.2 1963	28.4 1959	15.1 1962	36.8 1963	30.0 1959	11.3 1963	32.5 1963	27.3 1961	5.2 1961	30.2 1958	23.8 1958	2.4 1961	2.0 1958	22.3 1961	-0.6 1961	16.3 1961	1958	1958	Timure	
32.2 1962	20.4 1961	167.7 1962	34.2 1962	19.4 1959	281.0 1957	31.7 1958	17.9 1962	165.9 1961	30.4 1958	11.6 1960	108.5 1960	27.7 1958	5.8 1962	40.6 1963	27.5 1960	4.0 1961	19.1 1957	1957	1957	Pokhara	
30.7 1957	18.8 1963	95.5 1957	30.2 1957	19.3 1963	109.5 1957	30.0 1963	16.0 1963	61.7 1958	27.9 1957	13.8 1963	71.4 1958	25.9 1958	9.6 1963	12.3 1963	22.2 1958	7.8 1957	9.9 1957	1957	1957	Gorkha	
32.7 1962	15.6 1958	81.8 1959	33.1 1957	18.5 1962	95.3 1957	33.5 1963	16.0 1963	111.8 1959	31.0 1962	12.0 1960	51.8 1961	28.7 1963	7.3 1961	0	24.5 1963	3.3 1961	8.2 1961	1957	1957	Nuwakot	
Ghaghara Catchment (Trans Himalayan Region)																					
Dailekh																					
30.9 1962	16.8 1963	113.3 1959	28.6 1962	17.4 1958	95.0 1962	30.7 1957	15.6 1962	52.0 1963	26.2 1963	10.1 1962	43.4 1958	23.2 1958	5.6 1962	6.8 1963	20.6 1962	3.1 1963	50.0 1957	1957	1957	Dailekh	
Ghaghara Catchment																					
Dailekhura																					
27.1 1962	13.7 1958	107.5 1959	26.8 1957	13.5 1957	130.4 1961	26.6 1963	10.9 1963	122.8 1962	25.8 1960	5.1 1961	162.1 1961	22.4 1958	3.7 1960	18.9 1959	21.3 1957	-0.8 1961	86.6 1957	1957	1957	Dailekhura	
29.3 1962	17.5 1963	73.3 1963	29.6 1963	17.3 1962	73.2 1963	28.5 1961	13.0 1963	49.0 1963	27.0 1961	10.5 1963	41.0 1961	24.4 1957	6.0 1961	0	23.2 1962	3.0 1960	25.5 1961	1957	1957	Sallyana	
43.6 1963	21.7 1957	245.4 1960	36.8 1957	22.9 1962	179.0 1962	40.4 1963	21.4 1963	130.0 1958	35.9 1963	17.2 1959	112.0 1958	30.7 1958	9.4 1962	26.0 1963	28.5 1960	6.2 1958	12.0 1961	1957	1957	Butwal	
Bagmati Catchment																					
Kathmandu*																					
Kosi Catchment																					
Chautara																					
30.0 1962	15.4 1958	99.1 1954	29.0 1959	16.1 1956	78.7 1954	29.1 1963	14.1 1963	66.5 1963	27.8 1962	11.1 1960	74.3 1959	26.7 1958	6.2 1958	23.4 1956	23.6 1960	3.1 1961	15.5 1955	1955	1953	Chautara	
..	..	52.4 1963	..	..	83.8 1962	..	..	67.2 1963	..	..	42.4 1963	..	..	14.0 1961	..	..	46.6 1961	..	1961	Chepua
20.6 1953	4.4 1956	44.5 1954	19.9 1960	4.4 1953	55.1 1954	21.0 1962	3.9 1960	93.0 1963	19.4 1961	-2.9 1962	46.4 1963	15.6 1955	-6.0 1961	31.0 1963	15.9 1960	-8.8 1961	12.0 1963	1953	1953	Walungchung Gola	
32.8 1953	14.2 1962	78.2 1953	32.4 1958	15.6 1954	96.4 1961	31.7 1956	14.6 1963	59.6 1960	32.8 1956	9.0 1958	64.8 1960	29.4 1956	4.8 1961	25.4 1956	28.3 1956	3.3 1961	12.5 1957	1953	1953	Taplethok	
28.5 1962	16.1 1956	56.6 1956	29.6 1957	15.9 1957	78.0 1955	27.9 1963	13.7 1963	86.0 1963	26.8 1962	10.6 1957	113.0 1960	23.1 1958	7.2 1961	22.9 1956	19.9 1958	3.5 1961	12.0 1961	1955	1955	Bhojpur	
27.4 1961	15.0 1956	117.7 1959	28.6 1957	15.4 1962	104.2 1960	28.5 1958	12.6 1963	99.8 1954	26.0 1959	8.3 1955	68.3 1956	22.2 1958	2.4 1961	20.1 1956	20.3 1963	0.6 1954	12.7 1953	1953	1953	Taplejung	
27.9 1961	5.6 1953	143.5 1954	29.4 1953	15.0 1955	129.8 1963	28.3 1954	10.6 1953	95.2 1960	27.2 1959	4.7 1960	44.4 1963	22.8 1954	4.1 1961	19.8 1956	21.7 1953	1.1 1961	6.1 1957	1953	1953	Okhalthunga	
30.6 1953	16.7 1954	71.0 1957	31.7 1953	17.2 1955	95.2 1962	31.1 1953	15.0 1963	73.2 1963	28.9 1955	11.7 1955	67.2 1955	26.8 1959	8.3 1953	11.0 1963	25.6 1953	5.8 1961	8.9 1957	1953	1953	Chainpur	
32.4 1962	16.1 1953	82.5 1957	32.6 1957	15.0 1954	68.0 1959	31.3 1959	16.1 1963	80.0 1960	30.4 1957	11.5 1963	63.3 1957	25.6 1954	7.1 1961	19.0 1963	24.4 1953	5.1 1961	7.1 1957	1953	1953	Angbung	
37.1 1962	22.2 1962	179.8 1957	36.7 1957	22.1 1962	149.1 1958	35.4 1963	20.7 1960	208.6 1962	35.9 1960	14.9 1957	136.1 1953	30.6 1953	9.1 1961	29.5 1956	28.3 1955	7.5 1961	3.3 1957	1953	1953	Barakshetra	
Tista Catchment																					
Gangtok																					
28.2 1962	14.4 1956	100.8 1961	27.6 1957	15.1 1958	124.8 1962	28.5 1963	11.7 1956	108.8 1960	27.0 1962	8.1 1957	73.0 1959	22.3 1962	4.3 1961	25.0 1963	21.0 1962	1.0 1961	18.2 1963	1956	1956	Gangtok	
29.8 1958	14.9 1958	164.3 1957	32.2 1957	16.3 1959	106.7 1963	30.7 1961	13.9 1960	123.2 1960	28.9 1962	9.2 1960	46.5 1963	25.0 1960	4.9 1961	18.2 1959	22.2 1960	2.2 1961	15.8 1963	1957	1957	Gezing	

MONTHLY MEANS OF UPPER WINDS

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

During the month, observations of velocity and direction of upper winds were made at 54 stations in India. Out of these, at 39 stations all the observations were taken by means of pilot balloons and at 15 stations some observations were made by means of pilot balloons while the other observations by the radiowind method. In the case of Bangalore, the observations were taken by following radiosonde balloon by means of an optical theodolite. Particulars of these stations, their co-ordinates and the approximate times of the regular pilot balloon and rawin ascents at each station are given in the table overleaf. All radiowind ascents have been indicated by means of an asterisk (*) against the scheduled hours.

Data from ascents made at the scheduled time or within two hours on either side of the scheduled times of regular observations have been used for averaging.

Data up to 9.0 km. a.m.s.l. are given under Table IV and data above 9.0 km. a.m.s.l. under Table V.

In Tables IV and V :

n = represents the number of observations;

V = represents the mean wind speed in metres per second irrespective of direction;

v = represents the resultant mean velocity in metres per second;

D = represents the direction of the resultant mean wind in degrees East of North.

Means and resultant winds are given in this publication for the following heights :

Surface, 0.15 km. a.g., 0.3, 0.6, 0.9, 1.5, 2.1, 3.0, 3.6, 4.5, 5.4, 6.0, 7.2, 9.0, 10.5, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0, 30.0, 33.0 and 36.0 km. a.m.s.l. Of these the levels 1.5, 3.0, 5.4, 7.2, 9.0, 12.0, 14.1, 16.2, 18.0, 21.0, 24.0, 27.0 and 30.0 km. a.m.s.l. are considered as the best approximations to the standard pressure levels 850, 700, 500, 400, 300, 200, 150, 100, 70, 50, 30, 20 and 10 mb. respectively.

PARTICULARS OF PILOT BALLOON AND RAWIN STATIONS IN INDIA

S. No.	Station	Lat. N.	Long. E.	Height of anemometer head a.m.s.l. in metres	Date of opening	Approximate times of flight* (I.S.T.)			
1	Azartala	23°53'	91°15'	17	28th November, 1951	0530		1730	2330
2	Ahmadabad	23°04'	72°38'	61	19th May, 1928	0530*	1130	1730*	2330
3	Allahabad/Barnhraul	25°27'	81°44'	103	28th February, 1930	0530*	1130	1730*	2330
4	Ambala	30°23'	76°46'	279	1st April, 1941	0530	1130	1730	2330
5	Anantapur	14°41'	77°37'	365	12th February, 1946	0530		1730	2330
6	Asansol	23°41'	86°59'	135	29th May, 1942	0530		1730	2330
7	Aurangabad/Chikalthan	19°51'	75°24'	583	7th October, 1951	0530		1730	2330
8	Bahraich	27°34'	81°36'	134	1st October, 1961	0530	1130	1730	
9	Bangalore	12°58'	77°35'	936	19th May, 1915	0530@	1130	1730@	2330
10	Bareilly	28°22'	79°24'	181	12th January, 1943	0530		1730	
11	Begampet	17°27'	78°28'	543	1st September, 1929	0530		1730	2330
12	Bhagalpur	25°14'	86°57'	61	19th May, 1950	0530		1730	
13	Bhopal/Bairagarh	23°17'	77°21'	532	26th February, 1943	0530		1730	2330
14	Bhubaneswar	20°15'	85°50'	54	5th December, 1942	0530		1730	2330
15	Bhuj/Rudramata	23°15'	69°48'	90	14th September, 1937	0530		1730	2330
16	Bikaner	28°00'	73°18'	229	18th October, 1946	0530		1730	2330
17	Bombay/Santa Cruz	19°07'	72°51'	27	14th May, 1933	0530*	1130	1730*	2330
18	Calcutta/Dum Dum	22°39'	88°27'	13	14th May, 1921	0530*	1130	1730*	2330
19	Cochin/Willingdon†	09°56'	76°14'	13	16th March, 1942	0530		1730	2330
20	Dehra Dun	30°19'	78°03'	692	1st October, 1958	0530		1730	
21	Dibrugarh/Mohanbari	27°29'	95°01'	112	1st June, 1948	0530	1130	1730	2330
22	Gadag	15°25'	75°38'	650	3rd May, 1943	0530		1730	2330
23	Gangtok	27°20'	88°37'	1778	1st June, 1963	0830		1730	
24	Gauhati	26°05'	91°43'	55	12th March, 1955	0530*	1130	1730*	2330
25	Gaya	24°45'	84°57'	119	19th March, 1937	0530		1730	2330
26	Gopalpur	19°16'	84°53'	24	15th February, 1946	0530		1730	2330
27	Gorakhpur	26°45'	83°22'	83	5th January, 1943	0530		1730	
28	Gwalior	26°14'	78°15'	208	7th May, 1938	0530	1130	1730	2330
29	Imphal/Tulihal	24°46'	93°54'	782	8th March, 1952	0530	1130	1730	2330
30	Jabalpur	23°10'	79°57'	402	30th July, 1928	0530		1730	2330
31	Jagdalpur	19°05'	82°02'	562	25th March, 1948	0530		1730	2330
32	Jaipur/Sanganer	26°49'	75°48'	403	6th June, 1953	0530		1730	2330
33	Jamshedpur	22°49'	86°11'	144	23rd July, 1942	0530		1730	
34	Jharsuguda	21°55'	84°05'	240	1st May, 1944	0530		1730	2330
35	Jodhpur	26°18'	73°01'	229	15th October, 1934	0530*	1130	1730*	2330
36	Lucknow/Amausi	26°45'	80°53'	133	20th November, 1950	0530		1730	2330
37	Madras/Minambakkam	13°00'	80°11'	29	8th April, 1926	0530*	1130	1730*	2330
38	Mangalore/Bajpe	12°55'	74°53'	104	25th May, 1959	0530		1730	2330
39	Minicoy	08°18'	73°00'	15	14th April, 1941	0530	1130	1730	2330
40	Nagpur/Sonegaon	21°06'	79°03'	316	23rd April, 1943	0530*	1130	1730*	2330
41	New Delhi/Safdarjung	28°35'	77°12'	227	20th October, 1936	0530*	1130	1730*	2330
42	Poona	18°32'	73°51'	593	5th January, 1925	0530		1730	2330
43	Port Blair	11°40'	92°43'	95	29th October, 1945	0530*	1130	1730*	2330
44	Raipur	21°14'	81°39'	308	15th July, 1944	0530		1730	2330
45	Raxaul	26°59'	84°51'	83	28th October, 1957	0530		1730	
46	Siliguri/Baghdogra	26°38'	88°19'	140	7th June, 1953	0530		1730	2330
47	Srinagar	34°06'	74°48'	1603	1st August, 1962	0530*		1730*	
48	Tiruchchirappalli	10°46'	78°43'	96	22nd June, 1936	0530		1730	2330
49	Trivandrum	08°29'	76°57'	73	8th December, 1928	0530*	1130	1730*	2330
50	Udaipur	24°35'	73°42'	587	24th June, 1947	0530		1730	2330
51	Vengurla	15°52'	73°38'	8	22nd November, 1941	0530		1730	2330
52	Veraval	20°54'	70°22'	17	13th October, 1941	0530		1730	2330
53	Vijaywada/Gannavaram	16°32'	80°48'	32	8th April, 1942	0530		1730	2330
54	Vishakhapatnam	17°43'	83°14'	10	24th September, 1928	0530*	1130	1730*	2330

*Radio wind ascents.

†Naval Meteorological Office.

@Radiosonde ascents followed by optical theodolite.

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	AGARTALA												AHMADABAD											
	0530				1730				2330				0530*				1130				1730*			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.3	0.1	062	31	0.4	0.3	315	31	0.6	0.2	111	31	2.5	2.2	061	31	5.1	4.2	082	31	2.2	1.5	046
0.15 a.g.	29	2.6	1.1	026	31	2.5	1.3	323	31	2.8	1.3	346	31	6.6	5.9	067	31	6.0	5.1	076	31	3.2	2.1	014
0.3 a.m.s.l.	29	3.2	1.7	007	31	2.4	1.2	317	31	2.6	1.5	339	31	7.0	5.7	071	31	6.2	5.1	083	31	4.0	2.7	017
0.6 "	29	3.0	1.5	360	31	2.5	0.9	307	31	2.6	1.5	319	31	6.6	4.6	084	31	6.2	4.7	095	31	3.7	2.4	050
0.9 "	29	3.0	0.7	011	31	2.4	0.6	287	31	2.4	0.9	307	31	5.2	2.6	098	28	5.0	2.7	105	31	3.7	2.1	055
1.5 "	29	3.8	0.6	268	31	3.3	1.3	267	31	3.2	1.3	282	31	5.0	0.7	297	27	4.7	0.3	120	31	3.9	1.1	329
2.1 "	29	4.4	3.0	256	31	5.1	3.4	280	31	4.9	3.2	277	31	5.8	3.0	269	27	4.8	0.7	249	31	5.3	2.5	271
3.0 "	29	9.9	9.1	284	31	10.8	9.1	292	31	9.7	8.3	285	31	7.0	5.1	275	27	7.5	5.2	253	31	7.3	5.7	273
3.6 "	25	12.7	11.6	283	31	13.8	12.8	292	3	12.0	5.7	285	30	8.6	6.8	267	24	8.5	7.3	251	31	9.0	7.6	271
4.5 "	21	17.5	17.2	286	29	18.7	18.1	286					30	11.2	10.1	267	23	10.6	9.9	257	31	11.6	10.9	268
5.4 "	10	19.2	18.5	284	26	23.5	22.6	286					31	11.6	13.7	267	22	13.3	12.9	263	31	14.1	13.4	268
6.0 "	6	21.6	21.2	279	18	26.1	25.8	280					31	16.5	15.7	263	22	15.3	14.9	265	31	17.1	16.6	267
7.2 "	1	36.0	36.0	305	8	27.9	27.1	285					31	20.3	19.9	264	19	20.7	20.4	263	31	19.9	19.0	265
9.0 "					2	24.0	23.8	294					27	26.3	25.6	260	15	28.3	27.2	257	24	27.9	27.1	262

Station	AHMADABAD				ALLAHABAD/BAMHRAULI												AMBALA							
	2330				0530*				1130				1730*				2330				0530			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.2	1.6	042	31	0.4	0.1	303	31	0.9	0.5	272	31	0.5	0.4	308	31	0.2	0.1	261	31	0.6	0.1	288
0.15 a.g.	31	7.4	5.6	052	31	4.3	3.2	306	31	2.9	1.7	271	31	3.8	3.4	302	31	4.6	3.5	306	31	4.9	2.8	341
0.3 a.m.s.l.	31	7.4	5.4	057	31	4.3	3.2	306	31	2.6	1.8	279	31	3.7	3.4	302	31	4.6	3.3	307	31	2.0	0.8	336
0.6 "	31	6.0	4.1	062	31	4.4	3.0	330	31	3.1	2.0	287	31	3.9	3.0	297	31	4.6	3.7	305	31	5.3	3.4	334
0.9 "	31	5.1	2.8	074	31	3.8	2.8	310	31	4.0	3.1	297	31	4.6	3.7	294	31	5.1	4.2	309	31	5.4	3.2	332
1.5 "	31	5.0	0.8	037	31	6.4	5.7	308	31	6.6	5.9	309	31	6.4	5.0	309	30	5.6	4.9	296	30	5.0	1.8	330
"	31	5.2	1.7	248	31	9.8	8.8	304	31	9.1	8.4	305	31	8.5	7.6	302	28	7.3	6.4	298	29	5.1	3.1	312
3.0 "	28	6.5	4.7	263	31	11.6	10.7	297	30	11.4	10.4	298	31	11.5	10.7	302	23	9.0	8.0	298	29	7.1	5.1	284
3.6 "	5	8.6	6.6	257	30	11.9	11.0	295	30	12.7	11.4	292	31	13.1	11.9	296	2	5.5	4.4	279	24	7.7	6.0	278
4.5 "	1	17.0	17.0	260	29	13.2	12.5	293	26	13.9	13.2	288	31	15.8	15.1	290	1	4.5	4.5	315	16	11.1	9.0	269
5.4 "					29	18.1	17.1	287	22	17.1	15.8	287	31	18.9	18.1	285					8	11.7	10.8	270
6.0 "					29	21.6	20.9	281	19	19.0	18.2	284	31	22.1	21.6	281					5	12.0	11.2	263
7.2 "					27	26.3	25.8	278	19	25.6	24.6	273	28	26.8	25.9	278					1	10.5	10.5	260
9.0 "					19	32.0	31.3	274	9	31.9	31.5	274	17	31.9	31.4	274								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	AMBALA												ANANTAPUR											
	1130				1730				2330				0530				1730				2330			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	1.1	0.3	337	31	1.7	1.0	307	31	1.4	0.7	303	31	1.1	0.9	079	31	4.1	3.9	076	31	3.0	2.7	098
0.15 a.g.	31	3.8	1.5	336	31	4.1	2.8	301	31	6.8	5.1	326	31	4.3	3.6	096	31	5.9	5.7	082	31	7.4	7.2	104
0.3 a.m.s.l.	31	1.7	0.4	341	31	2.5	1.4	299	31	2.9	1.6	310												
0.6 "	31	5.0	2.1	339	31	4.6	3.1	304	31	6.4	4.5	324	31	5.3	4.4	101	31	5.3	5.0	083	31	7.8	7.5	102
0.9 "	31	4.7	1.8	342	31	4.9	2.6	319	31	5.5	2.9	327	31	7.1	6.7	090	31	5.4	5.1	081	31	7.3	7.0	094
1.5 "	31	4.6	1.0	335	31	5.5	2.8	332	31	5.0	1.3	307	28	7.3	6.5	078	30	5.8	5.2	082	30	6.2	5.6	073
2.1 "	30	5.5	1.8	302	30	5.5	2.9	320	30	5.0	2.7	293	27	7.5	5.9	075	27	6.9	5.3	076	30	6.9	5.5	071
3.0 "	29	6.4	4.5	292	30	6.1	4.1	299	29	5.1	3.3	277	23	7.1	5.5	066	23	7.2	5.6	050	27	6.8	4.7	062
3.6 "	28	8.0	6.3	277	29	7.4	5.8	295	8	5.1	3.7	274	21	6.8	4.2	041	19	7.8	6.5	033	22	6.4	4.5	051
4.5 "	27	10.8	9.1	274	27	9.3	8.3	284					17	5.7	3.0	019	15	5.8	4.2	018	13	5.9	3.8	054
5.4 "	25	15.0	13.4	268	23	13.6	12.2	278					15	5.5	1.9	003	13	6.0	2.0	023	3	3.0	2.1	212
6.0 "	25	16.9	15.4	274	23	16.8	15.5	276					15	5.8	1.5	329	11	5.8	1.5	025				
7.2 "	19	21.5	20.8	271	9	21.6	20.7	275					14	6.6	3.8	284	10	5.9	2.3	307				
9.0 "	3	20.0	19.8	254									9	11.4	10.7	248	5	7.5	5.9	225				

Station	ASANSOL												AURANGABAD/CHIKALTHAN											
	0530				1730				2330				0530				1730				2330			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.4	0.4	302	31	0.9	0.7	331	31	6.5	0.5	324	31	0.3	0.3	078	31	2.2	1.3	097	31	0.7	0.3	073
0.15 a.g.	31	5.9	5.1	336	31	2.8	2.2	325	31	6.9	5.7	353	31	5.2	4.8	101	31	3.7	1.8	100	31	5.9	4.8	072
0.3 a.m.s.l.	31	6.2	5.3	343	31	2.6	2.2	324	31	7.1	5.8	353												
0.6 "	31	5.3	4.0	352	31	3.2	2.4	322	31	5.4	4.1	350												
0.9 "	31	4.4	2.4	331	31	3.5	2.7	323	31	3.8	2.3	326	31	6.9	5.6	110	31	3.7	1.9	096	31	6.6	5.5	085
1.5 "	31	5.5	4.2	305	31	4.9	4.8	314	31	5.3	3.8	293	31	5.0	2.5	123	31	4.1	1.7	083	31	5.4	3.3	119
2.1 "	31	8.1	7.4	307	30	8.9	8.5	300	31	8.8	8.0	300	30	4.9	0.4	063	31	4.5	1.0	043	31	5.5	1.1	139
3.0 "	29	13.9	13.1	300	30	14.5	14.5	297	30	13.4	12.8	299	29	4.9	1.1	335	31	5.3	1.4	305	29	5.0	0.7	258
3.6 "	23	14.9	14.1	296	27	16.1	15.6	294	18	17.8	17.1	300	4	7.5	6.0	304	27	6.4	3.6	290	15	6.0	3.2	281
4.5 "	15	16.8	16.1	294	26	19.9	19.3	291	6	16.6	16.0	287	1	9.0	9.0	290	27	8.4	6.0	286				
5.4 "	5	15.8	15.6	271	22	24.0	23.2	283	2	17.5	17.5	285					26	9.4	6.7	279				
6.0 "	2	20.3	20.1	272	21	27.0	26.2	280	1	13.5	13.5	280					21	10.5	8.4	264				
7.2 "	2	27.0	27.0	265	10	26.7	26.2	281									4	19.6	17.4	278				
9.0 "	1	46.6	46.0	275	3	42.8	42.5	278									1	2.0	2.0	075				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	BAHRAICH												BANGALORE															
	0530				1130				1730				0530@				1130				1730@							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.4	0.1	288	31	0.6	0.3	258	31	0.4	0.2	277	31	2.1	2.0	082	31	3.4	3.1	082	31	3.2	3.1	078				
0.15 a.g.	31	5.4	4.1	320	31	2.7	1.2	283	31	3.5	2.4	276	23	7.5	6.7	075	31	5.0	4.6	076	31	5.9	5.4	081				
0.3 a.m.s.l.	31	5.3	3.8	320	31	2.9	1.2	283	31	3.7	2.4	268																
0.6 "	31	4.1	2.4	313	31	3.9	1.4	280	31	4.0	1.8	283																
0.9 "	31	3.8	1.3	325	31	4.2	1.1	287	31	4.1	1.5	285																
1.5 "	31	4.9	0.6	349	30	4.8	0.3	316	31	4.9	1.5	300	23	8.2	7.6	078	30	6.7	6.2	080	30	6.0	5.6	080				
2.1 "	30	5.7	4.1	311	30	6.6	3.3	315	31	6.9	3.9	323	20	8.9	8.1	078	26	6.8	5.9	071	30	6.1	5.5	078				
3.0 "	30	10.0	8.7	297	30	10.2	8.7	304	31	10.0	9.1	306	18	6.7	5.8	059	17	6.9	5.8	062	28	6.3	5.1	062				
3.6 "	27	11.1	10.4	295	30	11.7	11.0	299	31	11.5	10.9	301	17	6.6	5.1	059	17	6.9	5.6	055	26	6.7	5.2	048				
4.5 "	18	12.3	11.6	293	29	14.2	13.6	296	31	14.7	14.2	298	16	6.3	4.5	060	17	6.7	5.0	043	23	5.8	3.6	054				
5.4 "	11	14.3	13.5	287	27	17.3	16.7	292	30	17.8	17.0	293	14	6.2	2.8	070	16	6.3	2.4	043	23	5.6	2.2	053				
6.0 "	5	11.4	11.1	279	27	20.3	19.6	290	27	20.8	20.3	289	14	5.6	2.6	058	16	6.1	1.6	056	23	5.3	1.1	024				
7.2 "	1	21.0	21.0	285	22	27.4	26.9	285	15	25.9	25.7	283	14	4.6	1.2	319	14	6.9	0.7	264	22	6.4	1.6	241				
9.0 "					14	40.7	40.6	276	5	35.8	33.2	278	11	7.2	3.4	244	11	8.6	6.9	240	17	9.3	5.2	236				

Station	BANGALORE				BAREILLY								BEGAMPET															
	2330				0530				1730				0530				1730				2330							
Time in I. S. T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.7	2.5	085	31	1.1	0.7	315	31	0.7	0.4	292	31	0.4	0.3	090	31	2.5	2.1	073	31	1.4	1.2	070				
0.15 a.g.	25	8.1	5.6	088	31	5.4	3.8	318	31	3.5	2.4	286	31	4.7	3.7	105	31	4.3	3.6	082	31	6.4	5.5	084				
0.3 a.m.s.l.					31	5.1	3.6	319	31	3.3	2.3	284																
0.6 "					31	5.3	3.1	308	31	4.5	3.2	291	31	3.2	2.4	101	31	4.1	3.5	082	31	4.3	3.7	080				
0.9 "					31	4.8	2.2	305	31	4.2	3.0	291	31	5.9	4.6	098	31	4.4	3.8	084	31	6.2	5.4	094				
1.5 "	25	7.8	7.3	077	31	5.3	2.5	319	31	5.0	3.1	309	31	6.2	4.0	069	31	4.3	3.6	073	31	5.3	3.8	083				
2.1 "	24	7.9	6.7	071	30	6.7	6.0	308	31	6.7	5.1	308	31	6.8	3.8	051	31	5.0	3.1	056	31	5.6	2.9	051				
3.0 "	22	6.2	5.3	061	30	8.6	7.9	295	31	9.1	7.2	300	30	6.2	3.3	022	29	6.0	3.3	012	30	6.1	3.3	015				
3.6 "	21	5.9	4.9	057	28	9.5	8.7	293	31	10.7	9.6	297	30	6.5	3.2	010	28	6.5	3.6	353	12	6.2	3.3	332				
4.5 "	13	5.5	4.2	082	19	11.2	10.5	284	31	14.0	13.0	294	25	5.8	2.3	338	26	6.8	4.5	332	5	6.0	4.0	308				
5.4 "	7	5.5	3.5	090	10	11.5	10.1	272	31	16.8	15.9	288	21	6.1	2.5	286	23	7.9	4.7	317	2	11.0	8.1	283				
6.0 "	4	5.0	2.3	122	5	12.1	11.0	275	25	17.9	16.8	283	19	6.6	2.4	282	22	8.1	4.6	309	2	12.0	7.7	271				
7.2 "	2	9.0	8.3	212	2	9.0	9.0	285	9	20.3	16.3	275	9	6.7	6.1	280	16	10.0	7.1	289	1	14.0	14.0	215				
9.0 "	1	8.0	8.0	235	1	18.0	18.0	265					6	8.3	6.9	271	9	12.3	8.6	259								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	BHAGALPUR								BHOPAL/BAIRAGARH												BHUBANESHWAR											
	0530				1730				0530				1730				2330				0530											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.5	0.2	258	31	1.0	1.0	288	31	1.9	1.5	063	31	2.0	1.0	042	31	1.9	1.4	042	31	1.4	1.1	008								
0.15 a.g.	31	5.1	3.7	283	31	3.6	3.3	293	31	6.2	4.1	098	31	3.6	1.9	034	31	6.1	3.7	058	31	3.6	2.3	017								
0.3 a.m.s. l.	31	5.3	3.8	310	31	3.9	3.6	297													31	3.9	2.2	039								
0.6 „	31	3.9	2.3	321	31	3.7	3.2	297	31	5.2	3.6	076	31	3.1	1.8	039	31	5.6	3.5	055	31	3.7	2.2	036								
0.9 „	31	3.3	1.6	320	31	3.7	2.6	293	31	5.4	2.4	065	31	3.7	1.7	023	31	4.9	2.5	06	31	3.5	2.5	014								
1.5 „	31	4.7	0.8	337	31	4.5	1.8	292	31	4.8	2.3	321	31	3.7	2.0	319	31	3.9	2.0	291	31	4.8	3.6	337								
2.1 „	31	5.5	1.9	308	31	5.9	3.5	291	31	6.9	5.0	293	31	6.4	4.5	298	30	6.2	3.8	291	31	6.1	5.1	328								
3.0 „	30	11.9	11.1	297	30	11.8	10.8	300	30	7.9	7.0	289	31	9.2	5.2	310	31	8.1	6.2	296	31	8.1	6.9	308								
3.6 „	18	14.1	13.1	301	28	15.5	15.0	297	25	9.6	8.5	285	29	10.4	9.2	290	7	8.4	6.9	274	30	8.6	7.6	297								
4.5 „	6	14.5	12.5	284	26	18.2	17.8	290	20	11.4	10.1	278	24	13.9	13.3	280					22	10.1	9.5	278								
5.4 „	3	15.2	12.0	285	13	20.3	19.8	288	13	13.7	13.3	278	21	15.0	14.2	278					14	10.3	9.8	274								
6.0 „	2	16.3	14.9	306	5	19.6	9.2	292	11	15.7	15.0	272	17	15.9	15.2	277					8	13.3	12.6	269								
7.2 „					1	17.5	17.5	295	5	16.4	16.0	268	11	16.8	16.3	269					6	14.1	13.7	276								
9.0 „									3	14.8	14.4	280									4	16.1	15.3	21								

Station	BHUBANESHWAR								BHUJ/RUDRAMATA												BIKANER											
	1730				2330				0530				1730				2330				0530											
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.4	0.5	025	31	1.3	0.2	168	31	0.8	0.4	290	31	4.6	3.9	045	31	2.2	0.9	345	31	0.2	0.2	197								
0.15 a.g.	31	2.2	1.0	014	31	4.2	2.0	134	31	5.7	3.9	029	31	4.8	3.4	027	31	5.9	4.3	015	30	5.3	2.6	083								
0.3 a.m.s. l.	31	2.2	1.3	002	31	4.1	1.2	129	31	6.7	5.4	045	31	4.9	3.4	030	31	6.3	5.1	030	30	4.5	2.8	092								
0.6 „	31	2.1	1.1	006	31	3.4	1.1	339	31	7.3	4.9	056	31	4.7	3.2	029	31	6.5	5.1	041	30	5.1	1.9	034								
0.9 „	31	2.2	1.4	350	31	3.7	2.8	335	31	6.2	3.6	065	31	5.1	3.1	030	31	6.3	4.6	051	30	5.1	1.9	355								
1.5 „	31	4.8	4.1	333	31	5.6	1.4	330	30	5.0	0.8	292	31	5.1	0.7	078	31	5.3	1.0	090	30	5.8	3.2	309								
2.1 „	31	6.5	5.5	324	30	6.4	5.6	324	30	5.5	2.7	254	31	6.1	2.8	241	31	5.6	2.7	225	30	6.6	4.8	287								
3.0 „	31	8.6	8.0	310	29	7.7	6.5	310	30	6.4	4.8	242	31	7.3	5.6	257	31	7.1	5.1	250	26	9.0	7.7	273								
3.6 „	30	9.5	8.8	304	2	7.3	7.3	317	5	4.1	2.4	242	30	8.6	7.6	255	21	6.7	5.8	246	25	11.6	10.5	271								
4.5 „	30	11.5	10.7	296					1	3.5	3.5	195	30	11.6	10.7	260	1	6.5	6.5	225	24	14.3	13.5	265								
5.4 „	23	12.0	10.8	299									30	13.5	12.5	265					21	14.8	13.7	268								
6.0 „	18	12.9	11.3	279									29	15.9	15.1	265					16	15.1	13.8	266								
7.2 „	9	14.7	14.3	265									13	16.0	14.7	257					9	21.9	20.8	260								
9.0 „													2	20.5	20.4	242																

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	BIKANER								BOMBAY/SANTA CRUZ															
	1730				2330				0530*				1130				1730*				2330			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.5	0.1	255	31	0.5	0.2	007	31	0.9	0.9	080	31	2.0	1.4	090	31	3.3	2.7	315	31	1.2	1.0	025
0.15 a.g. . .	30	3.3	1.9	005	31	5.6	3.5	045	31	3.8	3.0	071	31	3.5	3.0	083	31	4.7	3.6	322	31	4.8	4.0	012
0.3 a.m.s.l. .	30	3.0	1.6	006	31	5.0	3.1	047	31	3.7	3.3	080	31	3.5	3.2	091	31	3.9	2.5	322	31	4.5	3.6	019
0.6 „ . . .	30	3.9	2.1	003	31	4.6	2.0	042	31	4.0	2.9	090	31	4.3	3.5	101	31	3.4	1.0	356	31	4.1	2.9	041
0.9 „ . . .	30	4.1	1.9	355	30	3.9	0.2	078	31	3.9	2.6	102	31	4.1	2.4	111	31	3.6	1.3	119	31	4.4	2.7	074
1.5 „ . . .	29	5.0	2.6	303	30	5.3	2.6	273	31	4.4	2.9	143	31	4.5	2.3	140	31	5.1	2.7	101	31	5.5	3.9	122
2.1 „ . . .	29	6.8	5.3	282	29	6.6	5.5	274	31	4.8	2.3	150	31	5.4	0.7	131	31	5.3	2.2	100	31	5.6	3.3	122
3.0 „ . . .	28	9.7	8.3	279	27	8.6	7.6	273	31	4.9	1.4	259	31	5.5	0.5	342	31	5.2	0.2	090	29	5.1	0.7	238
3.6 „ . . .	28	11.7	10.7	278	12	10.2	9.0	272	31	5.7	2.8	265	31	6.0	1.6	290	31	5.1	1.9	282	24	5.5	3.2	259
4.5 „ . . .	27	13.4	12.7	273	2	8.0	8.0	288	31	7.3	4.5	266	30	7.6	4.0	273	31	7.1	3.9	265	9	5.9	3.0	219
5.4 „ . . .	23	15.1	14.5	278					31	9.0	5.9	267	29	9.0	6.1	268	31	8.9	5.7	265	3	5.3	2.7	231
6.0 „ . . .	12	15.4	14.9	277					31	10.4	7.8	258	29	10.4	7.6	274	31	10.5	7.9	256	1	4.0	4.0	070
7.2 „ . . .	4	12.5	11.9	254					31	13.5	10.6	250	24	12.7	9.7	260	31	12.8	10.9	253				
9.0 „ . . .	2	24.7	24.5	269					30	17.4	16.3	247	19	14.4	12.6	250	28	19.0	17.5	243				

Station	CALCUTTA/DUM DUM								COCHIN/WILLINGDON†															
	0530*				1130				1730*				2330				0530				1730			
	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.3	0.3	356	31	0.9	0.6	350	31	0.3	0.3	360	31	0.3	0.1	273	31	1.5	1.2	068	31	2.6	1.8	250
0.15 a.g. . .	31	5.0	3.6	009	31	2.6	1.8	350	31	3.2	2.3	327	31	4.1	1.9	345	31	4.4	3.6	085	30	3.4	2.4	281
0.3 a.m.s.l. .	31	4.4	3.7	008	31	3.0	2.1	351	31	3.3	2.5	332	31	3.9	2.4	336	31	4.0	3.1	086	30	3.3	2.0	297
0.6 „ . . .	31	3.7	3.0	006	31	3.6	2.5	350	31	3.3	2.5	335	31	3.8	2.8	334	31	3.2	2.1	093	30	2.6	1.3	012
0.9 „ . . .	31	4.2	3.3	350	31	4.2	2.9	339	31	3.5	2.7	327	31	3.6	2.9	328	31	3.2	1.8	087	30	3.1	2.3	050
1.5 „ . . .	31	4.9	4.3	329	31	5.3	4.3	321	31	4.7	4.0	321	31	4.2	4.0	314	31	4.1	2.7	080	29	4.4	4.0	081
2.1 „ . . .	31	6.9	6.3	305	30	6.9	6.4	307	31	6.7	6.2	308	30	7.5	6.9	306	30	4.8	3.4	080	29	5.2	4.7	070
3.0 „ . . .	31	10.9	10.3	297	22	11.4	10.9	296	31	11.3	10.7	302	22	9.4	8.7	296	26	5.8	4.6	076	24	6.0	5.3	060
3.6 „ . . .	31	13.0	12.5	291	19	14.0	13.1	294	31	13.1	12.0	300	3	10.3	10.3	294	20	6.0	4.5	079	21	6.1	4.9	067
4.5 „ . . .	31	16.2	15.7	292	15	15.5	12.9	294	30	16.3	15.5	288					7	4.6	4.2	095	14	5.5	4.4	069
5.4 „ . . .	31	19.3	19.0	282	10	19.6	18.4	288	29	20.0	19.0	286					4	4.9	3.8	095	8	3.8	1.7	097
6.0 „ . . .	31	21.4	20.9	280	8	21.1	19.9	291	29	21.6	20.7	282					2	3.3	2.2	188	6	4.5	2.2	152
7.2 „ . . .	30	24.5	23.7	280	6	22.6	22.1	289	29	24.9	24.1	279					1	2.0	2.0	255	5	2.5	1.3	126
9.0 „ . . .	28	29.3	28.5	280	3	33.3	33.2	274	28	28.9	28.8	280					1	9.0	9.0	275	1	3.5	3.5	245

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	COCHIN/ WILLINGDON†				DEHRA DUN								DIBRUGARH/MOHANBARI											
	2330				0530				1730				0530				1130				1730			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.8	0.6	082	31	0.3	0.2	033	31	0.7	0.5	255	31	0.3	0.2	051	31	0.4	0.4	053	31	0.4	0.3	050
0.15 a.g.	30	3.1	1.6	100	31	1.7	1.1	060	31	2.2	1.3	255	28	3.7	2.8	055	31	2.0	1.1	090	31	2.1	1.5	047
0.3 a.m.s.l.	30	3.3	1.4	102									28	3.7	2.9	054	31	2.0	1.6	052	31	2.2	1.7	050
0.6 "	30	3.4	1.9	099									28	3.2	2.8	053	31	2.1	1.8	060	31	2.1	1.5	065
0.9 "	30	3.4	2.3	101	31	1.6	0.9	083	31	2.3	1.3	260	28	3.0	2.7	057	30	2.4	1.9	068	31	2.2	1.5	073
1.5 "	29	3.8	2.9	082	30	1.4	0.1	210	31	2.2	0.4	298	28	3.3	2.3	074	29	2.8	1.6	102	31	2.3	1.0	173
2.1 "	26	4.6	3.6	069	30	3.5	1.5	300	30	3.6	1.2	292	26	3.2	2.2	082	28	3.7	2.2	103	30	3.6	2.0	174
3.0 "	19	7.1	5.7	069	29	5.2	3.7	283	27	4.9	4.1	305	25	3.5	1.6	055	28	4.3	1.0	100	29	4.3	2.0	145
3.6 "	15	8.0	6.2	071	24	6.1	4.5	285	27	6.1	4.9	302	12	4.6	1.0	284	26	4.4	0.8	301	28	4.7	0.5	069
4.5 "	4	6.5	5.6	119	18	9.8	8.3	283	25	8.0	7.1	302	12	7.8	4.2	294	24	7.0	3.7	295	23	6.6	2.3	344
5.4 "	1	6.5	6.5	185	6	12.9	11.3	270	22	10.9	10.3	287	9	13.2	11.2	285	24	10.7	7.5	294	22	11.7	8.7	287
6.0 "					5	15.9	14.0	264	17	12.8	11.7	282	6	14.3	13.7	253	22	13.5	11.6	290	20	23.5	11.6	287
7.2 "									11	16.0	14.8	272					18	22.9	21.9	283	15	21.5	19.6	278
9.0 "									2	12.5	11.9	265					13	36.4	35.0	282	5	49.0	48.5	289

Station	DIBRUGARH/ MOHANBARI				GADAG								GANGTOK											
	2330				0530				1730				2330				0530				1730			
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.4	0.4	037	31	3.3	3.1	104	31	3.1	2.7	085	31	4.1	3.8	092	31	0.5	0.3	045	31	0.7	0.6	192
0.15 a.g.	30	2.8	2.7	040	31	7.2	6.8	109	31	5.1	4.7	089	31	8.1	7.6	094	27	1.6	0.3	117	23	2.3	0.9	180
0.3 a.m.s.l.	30	2.7	2.4	040																				
0.6 "	30	2.2	2.0	052																				
0.9 "	30	2.7	2.4	058	31	8.0	7.4	106	31	5.4	5.1	080	31	8.6	8.2	094								
1.5 "	30	2.7	1.5	075	31	7.3	6.4	089	31	5.9	5.5	087	31	7.2	6.8	089								
2.1 "	28	2.6	0.5	100	30	6.0	4.8	074	31	6.0	5.3	081	31	6.3	5.1	080	27	1.6	0.5	201	23	2.2	1.7	181
3.0 "	26	3.8	0.8	179	30	6.2	4.3	077	29	5.5	4.2	063	31	5.4	3.3	059	25	1.3	0.5	090	16	1.7	0.9	272
3.6 "	17	4.3	0.9	014	30	6.0	2.9	066	28	6.4	3.9	048	31	6.0	3.2	065	21	2.3	0.9	294	12	2.6	1.8	296
4.5 "	5	8.1	5.8	273	29	5.7	1.5	055	28	6.1	3.1	047	21	6.2	1.3	040	18	5.7	2.2	310	10	5.7	4.2	285
5.4 "	3	11.0	10.6	287	28	5.0	0.9	273	24	6.7	1.5	345	13	6.3	2.0	325	18	9.2	8.5	275	8	6.4	4.4	270
6.0 "	3	14.0	13.8	274	26	5.5	1.8	250	24	6.4	2.2	302	9	6.7	2.8	290	15	13.0	12.7	282	8	8.7	7.0	287
7.2 "					21	7.9	4.7	270	19	7.2	4.0	275	3	5.8	4.0	353	17	22.1	21.2	294	7	17.9	16.8	289
9.0 "					13	7.4	4.5	255	16	10.3	7.7	250					2	24.0	24.0	295	2	24.5	24.5	293

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	GAUHATI																GAYA											
	0530*				1130				1730*				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	CALM			31	1.6	1.2	040	31	0.2	0.1	024	31	0.3	0.2	145	31	0.9	0.8	202	31	1.9	1.6	302				
0.15 a. g. . .	31	2.0	1.5	090	31	2.3	1.8	031	31	3.1	2.1	050	31	2.4	1.5	105	31	3.3	2.1	253	31	3.4	2.9	301				
0.3 a.m.s.l. . .	31	2.2	1.7	088	31	2.4	1.9	058	31	3.0	2.0	055	31	2.8	1.6	086	31	3.5	1.9	275	31	3.4	2.9	300				
0.6 " . . .	31	3.5	1.1	090	31	3.4	2.1	075	31	2.7	1.5	074	31	3.5	2.2	080	31	3.5	2.1	308	31	3.4	2.9	298				
0.9 " . . .	31	3.6	1.4	090	31	4.0	2.4	090	31	3.1	1.0	106	31	3.0	1.3	080	31	3.5	2.6	301	31	3.5	3.0	290				
1.5 " . . .	31	4.4	1.9	099	31	4.8	2.2	109	31	4.3	1.0	173	31	4.2	0.8	086	31	5.1	4.4	301	31	4.7	4.1	291				
2.1 " . . .	31	5.5	2.2	085	31	5.3	2.4	113	31	4.8	1.3	193	30	5.3	1.6	088	31	8.1	7.5	302	31	7.6	6.9	299				
3.0 " . . .	31	5.5	0.6	297	31	6.0	0.7	165	31	6.4	1.8	281	29	6.9	0.6	082	30	11.8	11.3	297	31	13.2	12.6	301				
3.6 " . . .	31	9.0	4.5	286	29	7.8	3.1	267	31	8.7	5.7	280	17	7.6	2.1	275	21	11.3	10.5	290	26	12.9	12.5	298				
4.5 " . . .	31	12.9	11.4	280	28	14.4	13.0	281	31	14.2	13.3	286	12	10.4	7.8	280	8	10.8	9.7	282	12	13.5	13.2	298				
5.4 " . . .	30	18.8	17.7	283	25	18.3	17.8	280	31	19.2	18.7	283	7	12.4	10.8	290	5	13.3	11.7	282	5	11.5	11.2	277				
6.0 " . . .	30	23.8	23.3	281	24	21.0	20.5	280	31	23.1	22.8	282	6	16.9	16.0	288	2	19.5	16.1	303	3	13.5	13.5	281				
7.2 " . . .	28	28.6	28.0	297	23	27.7	27.3	282	31	30.6	30.0	284	3	29.5	29.3	273												
9.0 " . . .	23	39.3	38.5	291	13	37.2	36.9	284	24	40.0	39.1	286																

Station	GAYA				GOPALPUR								GORAKHPUR															
	2330				0530				1730				2330				0530				1730							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.8	0.4	210	31	1.9	1.8	318	31	2.6	2.0	093	31	1.1	0.6	314	31	0.8	0.5	281	31	0.8	0.6	265				
0.15 a.g. . .	31	4.0	2.6	333	31	5.2	4.2	348	31	4.2	3.6	099	31	3.3	0.9	095	31	4.2	3.0	304	31	2.8	2.2	265				
0.3 a.m.s.l. . .	31	4.1	2.8	327	31	3.6	1.9	036	31	4.2	3.0	089	31	6.0	1.3	068	31	4.3	3.2	298	31	2.9	2.3	268				
0.6 " . . .	31	4.0	2.6	318	31	3.8	2.2	052	31	3.6	2.4	040	31	2.9	1.3	059	31	3.4	2.3	288	31	3.3	2.5	275				
0.9 " . . .	31	3.7	3.0	293	31	4.1	3.1	025	31	4.0	3.2	358	31	5.2	2.4	017	31	3.4	1.4	290	31	3.5	2.2	285				
1.5 " . . .	31	5.5	4.6	279	31	5.4	3.2	352	31	6.7	5.1	343	31	5.1	3.8	344	31	4.5	1.3	335	31	4.4	0.9	310				
2.1 " . . .	31	7.4	6.8	292	29	6.3	4.3	342	31	6.8	5.3	337	30	6.3	4.6	336	31	5.4	2.7	305	31	6.1	3.7	309				
3.0 " . . .	25	10.7	10.2	300	29	9.9	5.8	324	31	7.5	6.1	321	30	6.4	4.9	314	31	10.9	9.6	298	30	11.7	11.1	305				
3.6 " . . .	2	10.0	9.8	307	29	9.7	5.8	299	29	8.3	7.1	308	7	5.7	3.9	311	24	11.9	10.7	299	29	13.3	12.8	299				
4.5 " . . .					27	7.2	6.1	289	28	9.2	8.0	286					13	13.3	11.9	290	29	15.8	15.1	293				
5.4 " . . .					20	8.6	7.6	275	28	10.4	9.3	281					6	12.3	9.9	285	23	19.2	18.5	289				
6.0 " . . .					18	8.6	7.3	267	28	11.1	10.1	280					2	15.3	13.9	285	15	21.4	20.8	283				
7.2 " . . .					7	8.6	7.6	242	24	12.5	11.5	277					1	25.0	25.0	305	3	20.3	20.3	269				
9.0 " . . .					2	5.7	5.4	285	19	14.5	13.3	276									1	26.5	26.5	255				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	GWALIOR												IMPHAL/TULIHAL															
	0530				1130				1730				2330				0530				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.3	0.1	249	31	0.9	0.5	334	31	1.0	0.7	336	31	0.4	0.1	203	31	0.1	0.1	045	31	0.6	0.3	187				
0.15 a.g.	31	4.0	1.6	356	31	2.0	0.8	342	31	3.1	2.2	350	31	4.1	1.8	005	20	1.5	0.9	082	31	1.3	0.7	176				
0.3 a.m.s.l.	31	3.0	1.1	328	31	1.9	0.8	346	31	2.8	2.0	350	31	3.3	1.4	006												
0.6 "	31	4.6	2.6	352	31	2.6	1.1	313	31	3.5	2.4	329	31	4.2	1.8	322												
0.9 "	31	4.8	3.7	329	31	3.9	2.7	307	31	3.8	2.7	313	31	4.5	3.1	299	20	1.5	1.1	063	31	1.2	0.6	170				
1.5 "	30	6.3	5.8	304	30	6.2	5.4	308	30	5.8	4.8	303	31	5.9	4.7	301	20	2.7	0.8	096	31	2.8	0.8	155				
2.1 "	30	8.6	7.9	300	30	8.0	6.5	300	29	8.0	7.1	299	30	7.5	6.5	291	19	4.7	2.0	106	31	4.8	1.2	162				
3.0 "	29	10.0	9.0	288	27	9.8	8.8	285	28	10.2	9.4	295	27	8.8	7.8	286	15	6.3	3.0	284	31	7.1	3.5	261				
3.6 "	28	10.5	9.9	291	25	10.9	10.0	283	27	11.6	11.0	294	3	8.3	8.3	287	11	10.2	8.5	273	31	10.3	6.2	274				
4.5 "	22	12.1	11.4	289	24	12.5	11.7	279	26	13.7	13.3	289					1	7.0	7.0	265	22	12.3	10.9	287				
5.4 "	20	15.3	14.6	282	23	14.8	14.0	277	25	16.6	16.3	283									17	18.1	16.8	294				
6.0 "	19	17.4	17.0	281	21	17.3	16.2	276	25	18.5	18.0	280									14	24.1	17.6	288				
7.2 "	8	20.4	20.3	275	13	22.8	21.7	264	17	23.3	22.6	275									7	26.6	15.6	276				
9.0 "	5	29.0	29.0	268	5	33.2	33.2	264	5	32.9	32.2	268									3	35.5	35.3	285				

Station	IMPHAL/TULIHAL				JABALPUR				JAGDALPUR																			
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	2.2	0.7	217	31	0.2	0.1	017	31	0.3	0.2	130	31	0.8	0.6	003	31	0.3	0.2	100	31	0.6	0.1	280				
0.15 a.g.	31	4.2	1.8	227	31	1.2	0.9	031	31	3.6	2.6	075	31	2.9	1.8	355	31	4.9	2.6	043	27	3.2	2.4	037				
0.3 a. m. s. l.																												
0.6 "									31	4.3	3.0	055	31	3.1	2.3	357	31	5.3	2.9	036	27	1.5	1.0	038				
0.9 "	31	4.0	1.6	228	31	2.0	0.9	041	31	5.4	3.7	010	31	3.6	2.7	345	31	4.5	2.5	006	27	4.2	3.5	041				
1.5 "	31	3.2	1.7	191	31	2.3	0.6	147	30	5.7	4.6	331	31	5.1	4.2	324	31	5.0	3.5	309	27	5.0	3.5	019				
2.1 "	31	3.7	1.6	210	31	4.1	1.4	198	29	8.1	6.7	310	31	7.7	6.9	311	31	7.3	5.7	307	26	6.1	3.8	014				
3.0 "	29	7.3	4.1	262	21	6.7	3.3	252	27	10.0	8.5	300	31	10.9	8.9	303	30	10.4	8.7	303	26	7.3	4.8	343				
3.6 "	26	10.7	8.8	279	13	9.8	8.5	277	24	10.4	9.0	293	31	12.5	11.2	306	18	11.2	10.1	294	25	8.5	4.9	318				
4.5 "	22	16.1	15.7	283	2	27.0	26.6	272	19	11.5	10.2	281	31	14.5	13.6	291					20	7.1	4.8	290				
5.4 "	14	21.3	20.6	288					9	14.6	13.9	268	28	17.8	16.8	284					16	6.6	4.8	277				
6.0 "	9	23.4	23.0	286					4	13.6	12.4	278	22	18.2	17.3	277					12	6.8	5.1	281				
7.2 "	4	23.7	23.6	286									10	17.8	17.5	275					2	6.0	5.1	284				
9.0 "	3	35.3	35.3	283									2	15.5	15.3	274					1	8.5	8.5	240				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	JAGDALPUR								JAIPUR/SANGANER												JAMSHEDPUR							
	1730				2330				0530				1730				2330				0530							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.7	0.3	343	31	0.2	0.1	082	31	0.7	0.7	052	31	1.0	0.5	315	31	1.1	0.7	015	31	0.9	0.7	292				
0.15 a.g. . .	31	3.1	2.3	012	31	4.4	3.0	055	31	4.6	1.8	047	31	3.1	0.3	354	31	5.3	1.6	049	31	3.9	3.1	310				
0.3 a.m.s.l. .																					31	3.6	2.4	325				
0.6 „ . . .	31	2.1	1.5	010	31	3.0	1.8	064	31	4.7	1.5	051	31	3.3	1.1	305	31	5.0	1.1	046	31	3.4	2.0	358				
0.9 „ . . .	31	3.5	2.5	009	31	4.2	2.9	044	31	5.0	2.1	319	31	3.3	2.0	312	31	4.3	1.0	297	31	3.6	2.0	341				
1.5 „ . . .	31	3.5	2.6	009	31	3.4	2.1	027	30	5.6	4.4	297	31	4.7	3.3	314	30	4.9	3.5	278	31	5.6	4.8	310				
2.1 „ . . .	31	5.5	3.8	011	31	6.4	4.3	012	30	7.2	5.9	291	31	7.1	5.9	290	29	6.9	5.7	292	31	8.4	7.8	311				
3.0 „ . . .	31	7.5	5.1	342	30	8.0	5.2	333	26	8.7	7.8	284	31	10.5	9.3	285	28	8.8	7.9	292	30	11.6	10.8	302				
3.6 „ . . .	31	8.5	6.2	319	5	10.5	6.2	282	11	8.5	7.8	278	30	12.0	11.1	280	22	9.4	8.6	287	16	13.9	12.8	288				
4.5 „ . . .	30	8.6	6.5	297					3	10.0	9.9	266	28	13.6	12.9	279	5	8.3	8.1	266	5	14.3	14.0	276				
5.4 „ . . .	26	8.9	7.4	282									25	16.1	13.5	275	2	8.7	8.7	241	2	14.7	14.7	273				
6.0 „ . . .	24	9.8	8.5	279									24	17.4	16.9	275					1	18.5	18.5	265				
7.2 „ . . .	10	8.7	7.9	268									18	21.1	20.3	272												
9.0 „ . . .													10	28.0	27.5	262												

Station	JAMSHEDPUR				JHARSUGUDA								JODHPUR															
	1730				0530				1730				2330				0530*				1130							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.6	0.4	298	31	2.1	1.9	027	31	1.0	0.2	251	31	0.8	0.4	065	31	2.2	2.0	035	31	2.5	1.5	055				
0.15 a.g. . .	31	2.6	1.9	323	31	4.9	4.5	044	31	2.2	0.6	271	31	3.1	0.4	178	29	7.1	5.0	057	31	3.5	2.0	063				
0.3 a.m.s.l. .	31	2.6	2.0	321	31	4.4	4.4	024	31	2.2	0.6	269	31	2.7	0.8	105	29	5.0	3.7	054	31	3.0	1.9	057				
0.6 „ . . .	31	2.8	1.9	318	31	4.4	2.7	036	31	2.3	0.9	289	31	3.2	0.7	288	29	6.4	3.3	058	31	4.2	2.2	068				
0.9 „ . . .	31	3.4	2.4	319	31	3.9	2.3	350	31	2.6	1.6	307	31	3.3	1.2	313	28	4.9	1.6	026	30	4.4	1.1	340				
1.5 „ . . .	31	5.5	4.9	305	31	5.2	4.1	323	31	4.9	4.1	328	31	4.5	2.8	335	28	5.2	3.4	276	30	4.9	2.2	299				
2.1 „ . . .	31	8.1	7.8	306	31	7.2	6.5	323	31	8.2	7.5	326	31	7.0	5.6	326	28	6.2	4.7	282	28	5.5	3.8	282				
3.0 „ . . .	31	13.1	12.5	301	30	10.3	9.3	310	30	10.9	9.7	308	27	9.4	8.2	309	28	8.4	7.4	269	27	8.3	7.5	268				
3.6 „ . . .	31	14.2	13.6	298	23	11.1	10.1	302	28	11.3	10.5	302	9	9.5	8.8	288	24	10.6	9.1	267	27	10.7	9.9	269				
4.5 „ . . .	25	16.9	16.4	291	13	13.3	12.1	285	21	13.7	12.8	297					17	12.5	11.9	265	25	13.0	12.5	267				
5.4 „ . . .	16	19.3	18.8	289	4	12.0	9.5	291	20	14.2	13.4	291					16	16.7	15.6	264	24	15.0	14.5	267				
6.0 „ . . .	6	22.2	21.5	275	3	12.0	10.9	273	17	15.5	14.5	282					14	18.6	17.3	265	23	16.8	16.5	248				
7.2 „ . . .	1	24.5	24.5	275	1	13.0	13.0	295	5	16.8	16.1	281					14	22.5	21.5	266	22	22.0	21.6	266				
9.0 „ . . .																	9	27.8	27.0	268	10	30.3	30.1	267				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	JODHPUR								LUCKNOW/AMAUSI												MADRAS/ MINAMBAKKAM							
	1730*				2330				0530				1730				2330				0530*							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	2.3	0.9	003	31	2.9	2.3	028	31	1.7	1.2	296	31	2.5	1.8	286	31	2.3	1.6	267	31	2.9	2.6	033				
0.15 a.g. . .	30	5.2	3.6	011	31	9.0	5.6	050	31	6.0	4.6	298	31	3.6	2.1	291	31	5.9	4.3	342	31	6.1	5.8	039				
0.3 a.m.s.l. .	30	4.7	3.1	011	31	7.8	5.5	050	31	5.9	4.4	300	31	3.6	2.3	291	31	5.9	4.3	337	31	6.2	5.9	045				
0.6 „ . . .	30	4.3	2.2	354	31	7.9	4.1	064	31	4.6	2.8	314	31	3.6	2.4	298	31	4.8	3.6	330	31	6.6	6.3	055				
0.9 „ . . .	30	4.1	1.5	003	31	6.1	1.8	068	31	4.7	2.9	310	31	4.2	3.0	300	31	4.4	2.9	327	31	6.8	6.1	058				
1.5 „ . . .	30	3.8	1.2	277	30	4.6	1.9	214	30	6.8	5.5	302	31	6.2	5.3	310	31	5.7	4.0	330	31	7.5	6.7	069				
2.1 „ . . .	30	6.1	4.5	281	28	5.6	4.0	260	29	7.9	7.2	303	31	8.5	8.0	308	29	7.9	7.1	299	31	7.3	6.0	074				
3.0 „ . . .	29	8.8	7.9	279	27	8.9	7.4	280	23	9.0	7.8	295	31	11.3	10.2	295	21	9.4	7.6	294	31	7.4	5.6	070				
3.6 „ . . .	27	10.2	9.2	274	12	9.6	8.5	284	14	9.7	9.1	280	30	12.9	12.3	299	9	9.7	8.4	341	31	6.5	4.7	076				
4.5 „ . . .	27	13.3	12.8	274	6	9.4	8.3	287	6	11.3	10.7	277	28	16.7	15.7	288	1	6.0	6.0	330	30	5.7	3.5	081				
5.4 „ . . .	27	15.7	15.3	271	2	13.3	13.1	282	2	10.0	9.9	247	22	18.5	17.8	285					30	5.6	2.5	085				
6.0 „ . . .	25	16.5	15.9	273	1	16.0	16.0	270	2	13.3	13.3	248	17	20.1	18.9	285					30	5.3	2.3	096				
7.2 „ . . .	24	23.9	23.2	268					1	19.5	19.5	224	13	34.0	26.2	281					30	5.8	1.2	168				
9.0 „ . . .	19	33.7	33.0	265									5	34.5	34.0	276					30	8.4	3.2	217				

Station	MADRAS/MINAMBAKKAM												MANGALORE/BAJPE															
	1130				1730*				2330				0530				1730				2330							
Time in I.S.T.																												
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	4.2	3.7	025	31	4.0	3.6	040	31	2.6	2.2	031	31	2.2	2.2	091	31	2.8	1.9	281	31	0.8	0.4	021				
0.15 a.g. . .	31	6.0	5.4	036	31	6.6	6.3	043	30	5.7	5.5	047	31	6.2	5.6	091	31	4.1	2.5	283	31	4.4	2.9	339				
0.3 a.m.s.l. .	31	6.3	5.8	037	31	6.6	6.3	045	30	6.5	6.3	051	31	6.7	6.0	091	31	3.9	2.0	286	31	4.4	2.7	341				
0.6 „ . . .	29	6.1	5.7	046	31	6.4	6.3	050	30	6.7	6.6	053	31	6.4	5.7	098	31	2.9	1.2	057	31	4.6	2.1	356				
0.9 „ . . .	29	6.8	6.4	050	31	6.9	6.6	053	29	7.5	7.2	054	31	5.7	4.9	101	31	3.6	2.8	081	31	4.1	2.3	060				
1.5 „ . . .	26	7.7	7.3	062	31	7.3	6.6	057	27	7.8	7.2	061	31	5.8	5.0	102	30	7.1	6.7	079	31	6.3	6.1	083				
2.1 „ . . .	22	8.6	7.8	060	31	7.5	6.6	062	24	8.3	7.7	059	29	5.8	4.2	089	30	7.5	6.9	084	30	8.1	7.9	089				
3.0 „ . . .	14	8.0	7.3	067	31	6.6	4.6	063	20	7.6	6.5	056	25	6.0	4.7	074	29	6.3	5.0	077	28	5.4	4.4	082				
3.6 „ . . .	12	6.4	5.7	069	31	5.4	3.8	074	11	6.8	5.5	075	25	6.5	4.8	073	27	6.1	4.9	065	22	6.2	4.7	062				
4.5 „ . . .	12	6.5	5.0	083	31	5.4	3.4	085	7	7.4	4.9	109	21	5.9	3.3	089	26	6.1	3.3	065	11	6.1	2.5	033				
5.4 „ . . .	11	6.5	3.4	087	31	5.9	2.8	076	5	8.2	7.1	126	20	5.5	1.9	061	21	5.5	1.9	100	7	5.6	0.4	167				
6.0 „ . . .	10	6.7	2.3	083	31	5.6	1.9	086	3	10.2	10.1	127	18	5.7	0.4	008	21	5.5	0.4	130	4	5.9	4.8	226				
7.2 „ . . .	8	6.7	1.2	119	31	5.6	1.1	190	2	15.5	14.6	107	10	7.6	3.8	262	19	8.0	3.3	225								
9.0 „ . . .	6	10.1	6.5	170	30	8.3	3.6	215	2	10.5	10.4	162	4	9.1	5.6	252	13	11.1	5.4	242								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	MINICOY																NAGPUR/SONEGAON							
	0530				1130				1730*				2330				0530*				1130			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	1.5	0.5	045	31	1.6	0.6	041	31	1.3	0.6	024	31	1.3	0.8	043	31	0.5	0.4	047	31	1.2	1.0	055
0.15 a.g. . .	29	4.0	1.8	031	30	4.0	1.7	047	31	3.2	1.3	010	30	3.5	2.0	037	31	4.1	3.2	043	31	2.8	2.5	040
0.3 a.m.s.l. . .	29	4.0	1.8	044	30	4.1	1.8	044	31	3.5	1.5	019	30	3.8	2.2	040								
0.6 „ . . .	29	4.3	1.6	044	30	4.4	1.9	044	31	3.8	1.9	033	30	4.0	2.5	042	31	4.3	2.7	043	31	2.9	2.2	054
0.9 „ . . .	29	4.6	1.9	065	29	4.8	2.4	062	31	3.8	2.1	043	30	4.3	2.8	053	31	4.2	2.1	033	31	3.3	1.6	034
1.5 „ . . .	28	4.7	2.7	085	29	5.2	2.9	070	31	4.8	2.6	068	29	5.1	3.5	082	31	4.8	2.1	343	31	4.2	2.4	341
2.1 „ . . .	28	5.2	3.6	092	30	5.8	3.4	078	31	5.1	3.1	081	29	6.1	4.9	081	31	5.9	3.2	327	31	5.7	3.6	328
3.0 „ . . .	23	6.0	3.4	089	27	6.5	3.6	075	31	6.1	3.7	070	25	6.1	4.0	072	31	7.0	5.7	313	30	7.6	5.4	309
3.6 „ . . .	22	6.0	3.6	076	25	6.6	3.6	071	31	6.6	3.9	067	18	4.8	2.2	082	31	8.5	6.9	300	30	8.7	7.0	293
4.5 „ . . .	19	5.3	2.8	081	24	6.7	4.3	079	31	7.3	4.3	076	10	4.2	3.1	103	31	10.2	8.2	292	29	10.2	8.9	287
5.4 „ . . .	18	5.2	1.5	095	21	5.9	3.5	092	31	5.9	3.2	090	7	3.7	1.3	154	31	11.7	10.4	274	26	10.9	9.8	275
6.0 „ . . .	17	4.6	1.7	096	21	4.8	2.8	100	31	5.7	2.5	088	4	2.1	1.7	129	31	12.9	11.8	267	24	12.5	11.7	269
7.2 „ . . .	14	4.3	3.0	132	19	5.9	4.0	127	31	5.5	3.6	130	3	5.7	5.0	147	31	16.2	14.9	271	22	16.2	15.4	275
9.0 „ . . .	11	8.0	4.6	182	16	9.1	5.0	167	30	10.0	6.4	142					28	20.0	19.5	262	19	20.4	19.7	268

Station	NAGPUR/SONEGAON								NEW DELHI/SAFDARJUNG															
	1730*				2330				0530*				1130				1730*				2330			
Time in I.S.T.																								
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . . .	31	0.3	0.3	057	31	0.8	0.5	017	31	1.5	1.1	312	31	1.9	1.5	291	31	2.0	1.6	315	31	1.2	0.6	278
0.15 a.g. . .	31	2.8	1.7	056	31	4.6	3.3	088	31	5.3	3.7	318	31	3.8	2.8	321	31	4.7	3.3	311	31	6.2	4.0	301
0.3 a.m.s.l. . .									31	5.0	3.6	316	31	3.5	2.5	319	31	3.8	2.6	313	31	5.6	3.5	293
0.6 „ . . .	31	3.0	2.0	051	31	4.4	3.1	087	31	5.8	3.7	319	31	5.1	3.6	320	31	4.6	3.2	312	31	6.1	4.3	315
0.9 „ . . .	31	3.0	1.9	039	31	3.7	1.9	063	31	6.1	3.9	316	31	5.7	4.1	314	31	5.0	3.6	312	31	5.8	4.3	313
1.5 „ . . .	31	4.7	2.7	326	31	4.7	2.9	352	31	6.3	4.8	312	30	6.1	4.3	296	31	5.8	4.6	308	30	5.2	3.5	300
2.1 „ . . .	31	6.0	4.2	325	31	5.4	3.2	325	31	7.2	6.2	300	30	6.3	4.6	290	31	7.0	5.5	305	28	5.9	5.3	293
3.0 „ . . .	31	7.8	5.8	298	31	8.1	5.9	307	31	8.7	7.6	290	29	8.1	6.7	284	31	8.2	7.3	295	26	7.2	6.8	293
3.6 „ . . .	31	8.9	6.6	300	23	8.4	7.1	293	31	9.8	8.4	284	26	9.1	8.2	287	31	9.5	8.1	290	3	5.7	5.5	300
4.5 „ . . .	31	10.1	8.9	290	3	12.0	11.8	268	31	13.6	12.9	283	25	13.0	12.1	282	31	12.7	11.4	284				
5.4 „ . . .	31	12.3	11.1	273					31	17.1	15.5	278	21	16.4	16.0	280	31	16.6	15.6	281				
6.0 „ . . .	31	12.6	11.6	271					31	20.1	19.2	279	20	18.8	17.9	278	31	19.0	18.2	280				
7.2 „ . . .	31	15.3	14.7	269					31	27.5	26.6	272	16	22.8	20.2	274	31	26.4	25.6	277				
9.0 „ . . .	28	20.2	19.7	267					29	39.3	38.7	270	7	31.7	30.9	266	31	36.3	35.7	272				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	POONA												PORT BLAIR																			
	0530				1730				2330				0530*				1130				1730*											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface ..	31	0.1	0.1	110	31	0.6	0.5	065	31	0.1	0.0	180	31	2.4	1.7	069	31	3.3	2.1	069	31	2.8	1.7	055								
0.15 a. g.	31	3.3	2.7	112	31	3.6	1.7	086	31	4.1	1.5	079	31	5.8	3.9	069	31	5.7	3.7	069	30	5.9	3.7	055								
0.3 a.m.s.l.													31	6.0	4.0	070	31	6.0	3.9	072	30	5.8	3.7	057								
0.6 "	31	1.5	0.5	132	31	2.4	1.1	087	31	1.7	0.4	145	31	6.9	4.2	081	31	6.3	4.0	081	30	6.8	4.5	066								
0.9 "	31	5.2	4.5	120	31	3.5	1.7	086	31	5.5	2.6	082	31	6.9	4.3	088	27	6.0	4.3	090	30	6.0	3.6	078								
1.5 "	31	6.3	4.8	115	31	3.8	2.3	108	31	6.3	4.5	098	30	6.7	3.9	116	19	5.6	2.5	117	30	5.0	2.4	109								
2.1 "	31	5.4	2.7	110	31	4.4	2.5	104	30	6.4	5.4	102	30	5.7	3.0	113	16	3.2	1.2	119	30	4.7	1.4	135								
3.0 "	30	4.8	2.0	321	31	4.6	0.8	067	26	4.8	1.3	105	30	4.9	2.1	097	12	3.8	2.4	076	30	4.4	1.5	109								
3.6 "	27	5.0	1.9	313	28	5.6	1.8	297	25	5.0	1.9	290	29	4.8	2.2	096	11	4.1	2.7	086	28	4.9	1.7	079								
4.5 "	15	6.8	3.3	268	25	6.5	2.8	294	14	6.2	2.8	292	17	4.5	2.2	080	10	6.2	5.6	080	26	5.1	2.5	072								
5.4 "	7	8.1	5.3	251	24	7.6	4.5	282	6	7.7	4.6	252	25	5.2	2.6	076	10	6.3	4.7	082	24	6.2	2.9	071								
6.0 "	4	8.0	3.7	290	23	7.5	5.1	282	6	6.5	5.0	252	25	5.9	2.8	072	8	6.9	5.5	087	23	6.0	3.3	080								
7.2 "	3	4.0	3.5	310	19	8.7	5.2	280	1	11.0	11.0	265	24	6.2	3.2	065	5	3.7	2.0	117	21	6.2	1.7	042								
9.0 "	3	5.8	1.6	298	16	11.5	9.5	246					20	7.6	2.8	329	2	9.0	1.3	073	13	8.6	2.3	355								

Station	PORT BLAIR				RAIPUR								RAXAUL																			
	2330				0530				1730				2330				0530				1730											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface ..	31	2.6	1.6	072	31	0.9	0.6	038	31	1.0	0.5	018	31	1.1	0.3	077	30	0.3	0.0	340	31	1.3	1.0	252								
0.15 a. g.	29	5.3	3.0	068	31	4.3	3.2	051	31	2.2	1.4	009	31	3.9	1.4	055	25	2.3	1.1	300	31	4.2	3.5	253								
0.3 a.m.s.l.	29	5.3	3.2	065													25	2.4	1.4	299	31	4.0	3.4	254								
0.6 "	29	6.8	4.0	080	31	4.5	2.9	044	31	2.3	1.5	010	31	3.7	1.1	040	25	2.9	1.9	274	31	3.9	3.2	264								
0.9 "	28	5.9	3.3	097	31	3.8	1.9	022	31	2.7	1.5	359	31	3.4	1.0	340	25	2.3	0.6	272	31	3.2	2.5	279								
1.5 "	21	4.3	1.9	158	31	5.1	3.4	337	31	5.1	3.8	338	31	4.2	2.9	355	23	3.4	1.3	090	31	3.2	0.2	290								
2.1 "	12	4.3	1.2	168	31	7.1	5.3	328	31	6.8	5.9	329	31	5.9	4.8	326	21	4.8	1.8	082	31	4.7	0.2	284								
3.0 "	8	3.6	1.2	057	31	8.9	7.0	313	31	10.2	8.1	315	31	6.5	6.5	314	17	7.5	4.6	277	25	6.9	3.6	307								
3.6 "	2	5.5	1.9	133	25	9.7	7.2	309	31	10.7	9.0	301	9	8.7	7.6	298	11	13.9	13.7	292	21	12.7	10.9	293								
4.5 "	1	1.0	1.0	110	14	9.6	7.7	269	27	11.6	10.0	296	2	3.3	2.0	301	6	17.2	16.9	289	10	15.5	15.5	293								
5.4 "	1	3.0	3.0	040	8	11.1	10.3	264	21	12.7	11.4	281	1	3.5	3.5	310	2	15.3	15.1	277	7	19.1	18.7	293								
6.0 "	1	3.5	3.5	070	4	7.5	6.2	271	17	11.8	10.7	300					2	19.0	18.7	277	3	20.2	20.0	295								
7.2 "					1	7.0	7.0	270	11	12.7	12.4	271									1	33.0	33.0	300								
9.0 "					1	8.0	8.0	290	3	9.0	8.0	274																				

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds up to 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	SILIGURI/BAGHDOGRA												SRINAGAR								TIRUCHCHIRAPALLI							
	0530				1730				2330				0530*				1730*				0530							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	0.8	0.8	054	31	1.1	0.5	230	31	1.0	0.7	354	21	0.2	0.1	200	27	0.5	0.3	295	31	2.8	2.3	003				
0.15 a.g.	30	2.5	2.0	068	31	2.3	1.3	238	31	2.7	0.3	301	21	1.5	0.9	160	27	1.5	0.3	118	29	7.0	6.0	019				
0.3 a.m.s.l.	30	2.6	2.1	080	31	2.3	1.3	238	31	2.7	0.5	259									29	7.7	6.7	023				
0.6 "	29	2.3	1.4	073	31	2.5	1.7	235	31	2.6	1.1	245									29	8.1	7.4	039				
0.9 "	29	1.9	0.5	070	31	2.5	1.9	235	31	2.6	0.7	248									29	8.0	7.4	041				
1.5 "	28	2.8	0.9	097	31	3.1	1.0	197	31	3.5	0.8	110									21	7.0	6.1	049				
2.1 "	27	3.6	1.7	085	28	4.0	0.5	086	30	4.5	1.7	105	21	1.3	0.8	140	27	1.5	0.3	106	21	6.2	4.9	060				
3.0 "	25	5.7	1.6	095	28	7.1	3.4	301	26	6.0	0.8	040	21	2.0	1.0	150	27	2.4	1.7	159	21	6.3	5.5	069				
3.6 "	24	9.2	5.3	301	23	9.5	6.1	287	8	7.4	5.5	291	21	3.5	3.1	157	27	4.0	3.5	165	20	6.4	5.5	067				
4.5 "	24	14.7	13.7	287	18	15.2	14.1	288					21	6.0	4.6	203	27	5.5	4.8	190	16	5.4	5.0	095				
5.4 "	15	17.1	16.9	291	15	20.1	18.9	290					21	9.0	6.7	250	27	8.5	6.6	240	16	5.7	5.0	096				
6.0 "	12	19.9	19.7	294	11	23.1	21.5	292					21	12.0	8.6	256	27	11.4	9.8	260	13	5.0	4.0	081				
7.2 "	3	27.0	27.0	304	7	24.5	24.3	293					21	18.3	14.5	260	27	18.8	17.0	266	9	4.6	2.6	115				
9.0 "					3	26.5	26.1	287					18	29.1	28.1	268	21	29.9	28.1	272	4	7.3	4.7	211				

Station	TIRUCHCHIRAPALLI								TRIVANDRUM																			
	1730				2330				0530*				1130				1730*				2330							
Time in I.S.T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface . .	31	3.2	2.7	045	31	2.9	2.2	041	31	1.7	1.3	029	31	1.0	0.2	349	31	1.7	1.0	226	31	0.5	0.2	070				
0.15 a.g.	30	5.2	4.6	047	30	7.0	5.9	048	31	2.6	1.3	031	31	2.1	0.3	311	31	3.0	2.0	260	31	2.3	0.8	237				
0.3 a.m.s.l.	30	5.5	4.9	048	30	8.0	6.9	049	31	2.7	1.5	029	31	2.1	0.2	288	31	3.0	1.0	256	31	2.2	1.1	229				
0.6 "	30	6.9	6.5	043	30	9.4	8.6	048	30	2.9	1.4	077	31	2.1	0.6	063	31	2.7	0.6	270	31	2.4	0.3	194				
0.9 "	29	7.5	7.3	041	28	9.1	8.6	043	30	2.9	1.7	085	28	2.8	1.7	064	30	3.7	1.8	041	31	3.3	2.0	076				
1.5 "	27	7.3	7.0	047	26	8.6	7.8	051	30	4.5	2.6	079	21	4.5	2.8	072	30	4.7	3.4	049	28	4.2	3.6	076				
2.1 "	25	8.5	7.8	049	22	7.9	6.6	054	31	5.8	4.0	075	16	7.1	5.6	072	30	6.1	4.5	062	26	5.6	4.5	078				
3.0 "	20	7.7	7.1	051	20	7.3	6.7	057	31	5.9	4.1	078	12	7.5	6.4	076	30	6.1	4.6	069	25	5.8	3.8	090				
3.6 "	18	6.6	5.3	059	15	6.5	5.7	059	31	5.9	4.1	065	10	6.3	5.7	094	30	6.1	3.9	080	18	5.5	3.7	074				
4.5 "	18	6.1	4.7	062	7	8.9	7.9	073	31	6.9	4.6	075	9	7.2	6.6	080	30	6.5	4.1	074	7	4.1	3.2	086				
5.4 "	16	6.3	4.7	069	2	16.0	15.3	061	31	6.1	4.1	079	7	6.3	4.9	097	30	6.0	3.8	076	4	4.1	3.9	092				
6.0 "	15	6.6	5.2	072	1	28.5	28.5	055	31	5.3	3.2	095	6	7.5	6.0	089	30	5.6	3.4	075	3	6.2	3.5	088				
7.2 "	12	4.8	3.8	053					31	4.9	3.2	098	4	6.0	4.9	092	30	5.4	3.4	093								
9.0 "	7	2.3	0.6	041					31	8.4	6.1	130	4	9.6	4.9	177	30	8.5	5.9	129								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 Km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	UDAIPUR												VENGURLA																			
	0530				1730				2330				0530				1730				2330											
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D				
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	0.1	0.1	180	31	0.3	0.3	240	31	C	A	L	M	31	0.5	0.4	019	31	1.8	1.7	269	31	0.6	0.6	360							
0.15 a. g.	31	2.5	1.0	007	31	2.9	1.2	092	31	2.8	1.1	072	31	4.1	3.0	072	31	3.4	2.6	273	31	4.2	3.7	013								
0.3 a. m. s. l.													31	5.2	3.8	081	31	3.3	1.8	272	31	4.7	3.7	011								
0.6 "													31	5.6	4.3	094	31	3.0	0.8	077	31	4.6	2.6	047								
0.9 "	31	3.8	1.3	060	31	3.1	0.9	087	31	3.2	1.1	083	31	5.9	4.9	101	31	3.5	2.2	078	31	5.5	3.7	073								
1.5 "	31	5.0	1.2	336	31	3.5	1.2	298	31	3.5	0.3	240	31	5.0	4.3	105	31	5.8	5.3	080	31	6.6	6.1	093								
2.1 "	30	6.1	3.9	294	31	5.3	3.1	286	31	5.3	2.5	263	31	5.1	4.1	101	31	7.1	6.2	078	31	6.4	6.1	092								
3.0 "	24	8.3	6.7	283	31	9.1	7.8	285	28	6.1	4.6	281	30	5.1	1.9	078	31	5.8	4.2	082	31	5.4	3.2	085								
3.6 "	23	9.5	7.0	275	30	9.8	8.7	261	4	8.2	7.7	269	9	5.1	1.1	026	31	5.6	2.6	079	8	4.7	1.1	189								
4.5 "	17	10.3	7.7	275	28	11.1	10.2	273									31	6.5	1.2	077												
5.4 "	12	13.8	12.1	272	22	12.5	12.2	279									31	6.9	0.0	294												
6.0 "	9	16.5	14.0	278	21	13.7	13.5	281									31	7.4	1.9	265												
7.2 "	7	15.1	14.8	269	7	17.4	16.7	264									19	7.6	5.2	259												
9.0 "																	8	18.6	17.5	249												

Station	VERAVAL												VIJAYWADA/GANNAVARAM															
	0530				1730				2330				0530				1730				2330							
Time in I. S. T.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface	31	3.6	3.3	022	31	4.2	1.5	221	31	2.6	2.3	021	31	2.2	2.1	044	31	2.3	1.9	083	31	2.0	1.4	089				
0.15 a. g.	31	9.1	7.9	038	31	4.9	1.5	203	31	6.2	4.4	037	31	4.8	4.0	062	31	3.0	2.4	093	31	5.5	4.5	108				
0.3 a. m. s. l.	31	7.8	6.1	047	31	4.8	0.7	161	31	6.3	4.4	044	31	4.9	4.3	080	31	3.1	2.5	084	31	5.9	5.2	099				
0.6 "	31	5.7	4.0	055	31	3.9	1.8	048	31	5.5	3.8	052	30	5.0	4.4	080	31	3.5	2.9	071	31	5.5	4.8	076				
0.9 "	31	5.0	2.4	068	31	3.9	2.3	050	31	4.7	3.0	066	30	4.9	4.4	065	31	3.9	3.4	055	31	5.0	4.3	053				
1.5 "	31	4.9	1.4	135	31	4.5	2.0	053	31	5.0	2.0	077	29	6.0	4.8	049	30	5.1	4.3	042	31	6.0	4.2	039				
2.1 "	31	5.7	2.3	175	31	4.8	0.3	117	31	5.4	0.4	138	29	6.8	4.5	049	30	6.8	4.2	034	31	6.6	4.3	046				
3.0 "	31	6.4	3.4	234	31	6.7	3.0	240	31	6.5	2.0	217	26	7.2	3.5	030	29	7.3	3.5	011	29	7.7	3.8	023				
3.6 "	20	8.0	4.5	255	30	8.6	5.4	264	17	6.7	1.7	193	23	6.7	2.3	010	28	7.3	2.6	344	17	6.6	3.4	009				
4.5 "	9	9.9	7.9	253	30	10.3	7.9	261	12	6.7	5.0	234	23	6.8	2.3	322	26	6.2	3.8	328	12	5.2	2.8	329				
5.4 "	8	13.9	12.4	255	29	11.3	9.8	269	5	10.8	8.4	236	20	8.4	3.9	271	24	6.7	3.8	300	7	8.9	7.7	291				
6.0 "	6	11.5	10.7	257	28	12.0	10.8	267	3	8.8	5.5	235	17	6.3	3.0	231	21	7.6	4.6	280	5	7.8	5.6	250				
7.2 "					26	15.9	14.6	260					10	9.5	6.3	260	17	9.0	7.2	270	1	4.0	4.0	255				
9.0 "					21	19.6	18.7	257					8	11.8	9.9	247	12	13.1	12.5	258								

TABLE IV—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds upto 9.0 km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Station	VISHAKHAPATNAM															
	0530*				1130				1730*				2330			
Time in I.S.T.																
Ht. in Km.	n	V	v	D	n	V	v	D	n	V	v	D	n	V	v	D
Surface .	31	4.0	3.6	017	31	2.3	1.7	073	31	3.2	1.6	047	31	0.6	0.5	058
0.15 a. g. .	31	8.7	8.3	022	31	3.3	2.2	067	31	6.5	5.9	043	30	3.2	2.4	070
0.3 a. m. s. l. .	31	7.6	6.7	030	31	3.2	2.2	063	31	6.4	6.1	049	30	3.6	2.8	077
0.6 „ .	31	5.6	4.2	047	31	3.1	2.5	058	31	5.8	4.2	064	31	3.8	2.9	067
0.9 „ .	31	4.2	3.5	053	31	3.4	2.7	048	31	4.6	3.8	053	31	3.9	3.1	039
1.5 „ .	31	5.2	3.0	046	24	6.0	4.4	044	31	5.6	4.2	010	28	5.3	4.1	026
2.1 „ .	31	5.7	3.0	016	24	6.4	3.5	027	31	6.5	4.9	008	27	5.5	2.7	017
3.0 „ .	31	7.0	3.3	330	22	6.3	3.6	356	31	6.3	4.0	348	20	5.6	3.1	345
3.6 „ .	31	6.9	3.9	323	20	6.1	3.3	333	31	6.5	4.3	324	10	6.8	3.9	336
4.5 „ .	31	6.8	4.3	303	18	6.4	3.3	313	31	6.1	3.8	292	8	5.3	1.6	260
5.4 „ .	31	5.6	4.9	275	11	5.5	3.9	250	31	6.9	4.1	296	4	6.9	4.8	271
6.0 „ .	31	9.0	7.1	267	11	6.0	4.0	247	31	7.4	4.7	271	2	5.7	5.1	286
7.2 „ .	31	11.1	9.2	263	7	10.3	9.4	260	31	10.1	8.1	270				
9.0 „ .	30	14.8	13.1	271	7	18.2	17.7	261	29	13.5	12.0	269				

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 Km. above mean sea level

December, 1963 (Agrahayana 10, —Pausa 10, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D					
	AHMADABAD					BANGALORE					BOMBAY/ SANTAGRUZ													
	0530 hr.*					0530 hr. @					0530 hr.*					1730 hr.								
10.5	23	29.1	28.6	253	10.5	9	9.2	8.3	240	10.5	30	20.7	18.8	241	16.2	2	17.5	16.3	261	10.5	1	38.0	38.0	290
12.0	18	31.5	30.8	247	12.0	8	10.6	6.9	267	12.0	29	22.3	20.5	241	18.0	1	26.0	26.0	240		JABALPUR			
14.1	7	27.5	26.8	237	14.1	2	7.8	4.9	020	14.1	13	21.2	17.5	240	21.0	1	4.0	4.0	260		1730 hr.			
16.2	3	11.7	7.1	240	16.2	1	5.0	5.0	305	16.2	5	22.5	21.6	236	10.5	15	12.4	10.1	246		1730 hr.			
18.0	1	12.0	12.0	360	18.0	1	4.0	4.0	315	18.0	1	4.0	4.0	315	12.0	10	13.5	11.3	255		JAIPUR/SANGANER			
	1130 hr.					1130 hr.					1130 hr.					14.1								
10.5	1	25.0	25.0	235	10.5	4	5.0	3.5	215	10.5	11	15.5	12.8	252	14.1	7	14.9	13.9	250	10.5	3	29.7	29.6	264
	1730 hr.*					1730 hr.*					1730 hr.*					16.2								
10.5	18	29.5	28.8	255	12.0	3	4.3	1.8	243	12.0	8	18.1	15.3	243	18.0	6	12.7	11.4	261		JODHPUR			
12.0	12	32.6	32.1	253	14.1	2	6.0	3.1	167	14.1	2	14.0	11.1	201	21.0	6	7.9	7.7	273		0530 hr.*			
14.1	5	20.5	19.8	254	16.2	2	4.5	1.1	015	16.2	1	5.0	5.0	065	21.0	4	14.1	13.6	270		1730 hr.			
16.2	4	8.5	5.8	232	18.0	1	7.0	7.0	100	18.0	1	7.0	7.0	100	21.0	2	12.0	4.6	350	10.5	7	26.8	25.9	264
18.0	2	13.0	12.3	261		1730 hr. @					1730 hr.*					GANGTOK								
21.0	1	24.5	24.5	220	10.5	15	10.9	8.8	231	10.5	27	21.8	20.0	242	10.5	1	38.5	38.5	290		1730 hr.			
	ALAHABAD/ BAMHRAULI					BEGAMPET					CALCUTTA/ DUM DUM					GAUHATI								
	0530 hr.*					0530 hr.					0530 hr.*					0530 hr.*								
10.5	12	36.1	35.7	263	10.5	3	15.2	14.7	258	10.5	15	32.8	32.0	281	10.5	17	38.1	37.6	284	10.5	4	36.6	36.5	260
12.0	3	47.3	46.9	271	12.0	1	6.0	6.0	135	12.0	10	34.0	32.0	270	12.0	14	48.7	47.5	289	12.0	3	38.7	38.5	262
	1730 hr.*					1730 hr.					1730 hr.*					14.1								
10.5	11	34.6	33.7	273	14.1	1	11.0	11.0	150	14.1	2	30.5	30.5	262	14.1	6	45.2	44.3	290	14.1	2	39.7	39.5	260
12.0	2	43.5	42.2	269	16.2	1	4.5	4.5	150	16.2	20	34.2	33.2	274	16.2	7	41.8	41.1	279	16.2	1	31.0	31.0	265
	ANANTAPUR					BHOPAL BAIRAGARIH					COCHIN/ WILLINGDON†					GAUHATI								
	0530 hr.					0530 hr.					1730 hr.*					0530 hr.*								
10.5	6	13.3	12.7	250	18.0	1	7.0	7.0	100	18.0	13	29.2	28.2	275	18.0	8	47.0	46.2	297	18.0	2	39.7	39.5	260
12.0	5	15.6	13.4	261	21.0	1	8.0	8.0	035	21.0	4	22.3	21.0	286	21.0	1	25.0	25.0	295	21.0	1	31.0	31.0	265
14.1	3	17.8	16.4	262		1730 hr.					1730 hr.*					16.2								
16.2	1	5.5	5.5	265	10.5	3	10.3	8.4	257	10.5	2	30.5	30.5	262	10.5	17	46.0	45.2	288	10.5	14	35.2	34.6	262
18.0	1	6.0	6.0	245		BHOPAL BAIRAGARIH					COCHIN/ WILLINGDON†					1730 hr.*								
21.0	1	8.0	8.0	265		0530 hr.					1730 hr.					1730 hr.*								
	1730 hr.					0530 hr.					1730 hr.					1730 hr.*								
10.5	1	5.5	5.5	030	10.5	3	13.8	13.8	273	10.5	1	5.5	5.5	250	10.5	15	22.0	20.7	274	10.5	14	45.7	45.1	259
	ASANSOL					BHUBANESHWAR					DIBRUGARH/ MOHANBARI					GAUHATI								
	1730 hr.					0530 hr.					1730 hr.					0530 hr.*								
10.5	2	55.7	55.0	214	10.5	3	11.7	10.5	289	10.5	5	51.0	48.2	279	10.5	5	20.9	20.4	269	10.5	29	9.8	5.0	245
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	12.0	2	5.0	5.0	332	12.0	1	40.0	40.0	285	12.0	1	34.0	3.0	265	12.0	13	8.9	1.8	215
	1730 hr.					1730 hr.					1730 hr.					1730 hr.*								
10.5	2	48.8	48.0	272	14.1	1	4.5	4.5	300	14.1	5	51.0	48.2	279	14.1	1	4.0	4.0	220	14.1	3	4.7	1.8	010
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	16.2	1	6.0	6.0	285	16.2	8	8.4	5.2	240	16.2	1	38.0	38.0	260	16.2	21	11.3	3.4	137
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	13	8.9	1.8	215
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	12.0	5	15.1	13.1	231	12.0	5	15.1	13.1	231	12.0	1	38.0	38.0	260	12.0	3	15.3	15.3	123
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	14.1	3	13.5	11.6	245	14.1	3	13.5	11.6	245	14.1	1	42.5	42.5	295	14.1	1	20.5	20.5	140
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	4	12.5	11.9	160
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	3	15.3	15.3	123
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	1	20.5	20.5	140
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	1	20.5	20.5	140
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	4	12.5	11.9	160
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	1	20.5	20.5	140
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	4	12.5	11.9	160
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	1	20.5	20.5	140
	BAHRAICH					BHUJ/ RUDRAMATA					DIBRUGARH/ MOHANBARI					GWALIOR								
	1130 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	4	42.5	42.0	270	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	4	12.5	11.9	160
	1730 hr.					1730 hr.					1730 hr.					0530 hr.								
10.5	2	48.8	48.0	272	10.5	1	15.0	15.0	250	10.5	3	13.5	11.6	245	10.5	1	42.5	42.5	295	10.5	1	20.5	20.5	140

TABLE V—MONTHLY MEAN DIRECTIONS AND VELOCITIES OF UPPER WINDS

Winds above 9.0 Km. above mean sea level

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D	Ht. in Km.	n	V	v	D					
	MADRAS/ MINABAKKAM					NAGPUR/ SONEGAON					PORTBLAIR					VISHAKHAPATNAM								
	1730 hr.*					0530 hr.*					0530 hr.*					0530 hr.*								
10.5	29	11.1	4.4	220	10.5	17	23.5	23.0	235	10.5	17	10.8	5.6	293	18.0	1	9.0	9.0	230	10.5	28	17.3	15.4	265
12.0	28	12.9	4.3	213	12.0	11	25.7	24.9	252	12.0	13	11.7	5.1	309	21.0	1	2.0	2.0	355	12.0	28	19.3	16.0	260
14.1	23	12.4	4.0	175	14.1	2	8.0	8.0	248	14.1	10	14.3	6.0	302		TRIVANDRUM				14.1	27	17.9	15.2	265
16.2	16	10.6	5.4	147		1130 hr.				16.2	5	11.2	4.8	251		0530 hr.*				16.2	21	13.4	9.0	257
18.0	11	9.0	3.0	195	10.5	12	26.2	25.6	265	18.0	1	4.5	4.5	225	10.5	31	10.0	5.0	136	18.0	12	8.8	4.8	269
21.0	2	6.5	6.4	320	12.0	5	25.4	24.5	267		1130 hr.				12.0	31	13.2	3.3	099	21.0	5	9.4	6.7	290
	2330 hr.					1730 hr.*					1730 hr.*					1130 hr.				24.0	1	6.0	6.0	315
10.5	2	9.3	9.1	145	10.5	25	24.6	23.3	265	12.0	1	16.5	16.5	245	14.1	30	16.0	3.7	146	14.1	7	22.6	21.7	255
12.0	2	18.5	18.3	138	12.0	16	28.4	26.2	256	14.1	1	19.0	19.0	255	16.2	25	9.6	0.2	260	12.0	6	20.3	19.9	254
14.1	2	17.5	15.3	141	14.1	1	27.0	27.0	250	10.5	9	12.0	7.0	295	18.0	19	5.5	2.3	264	14.1	3	23.3	22.9	250
16.2	2	8.3	4.3	154		NEW DELHI/ SAFDARJUNG				12.0	7	13.1	10.2	273	21.0	13	14.8	14.2	271	14.1	2	14.5	9.7	261
18.0	1	4.0	4.0	060		0530 hr.*				14.1	1	12.0	12.0	270	24.0	1	14.0	14.0	250	16.2	2	7.7	7.1	242
21.0	1	4.0	4.0	010	10.5	29	46.3	45.6	269		RAIPUR				10.5	3	12.3	11.1	183	18.0	2	7.7	7.1	242
	MANGALORE/ BAJPE				12.0	24	46.9	46.0	267	10.5	1	5.0	5.0	310	12.0	2	11.7	11.1	243		1730 hr.*			
	0530 hr.				14.1	21	38.1	37.4	263		0530 hr.				14.1	1	11.0	11.0	305	10.5	26	17.9	17.8	267
10.5	3	13.3	12.8	254	16.2	20	23.3	23.0	263		1730 hr.*				16.2	1	6.0	6.0	335	12.0	25	20.2	18.4	258
12.0	2	14.0	13.9	285	18.0	17	13.1	12.5	268		SILIGURI BAGHDOGRA				10.5	30	11.0	7.1	133	14.1	23	19.7	16.3	256
	1730 hr.				21.0	14	5.4	3.7	291		1730 hr.				12.0	28	12.0	3.7	125	16.2	18	16.1	12.7	255
10.5	6	11.7	8.6	224	24.0	7	7.1	5.1	144		1130 hr.				14.1	27	15.4	3.0	110	18.0	10	12.1	10.3	255
12.0	4	14.0	12.3	247	27.0	2	4.0	1.8	131	10.5	1	36.0	36.0	290	16.2	21	7.8	1.2	110	21.0	5	7.5	5.9	281
14.1	2	16.5	14.9	246	10.5	2	29.3	28.5	262		SRINAGAR				18.0	18	7.3	1.5	215	24.0	2	5.5	5.4	298
16.2	1	5.0	5.0	295	12.0	1	26.0	26.0	320		0530 hr.*				21.0	13	14.1	13.2	292		VERAVAL			
	MINICOY				14.1	1	35.5	35.5	265	10.5	13	38.3	37.5	270	24.0	2	19.5	19.5	277		1730 hr.			
	0530 hr.					1730 hr.*				12.0	9	42.1	41.8	269		0530 hr.				10.5	16	22.8	22.0	255
10.5	4	10.0	4.3	147	10.5	26	41.5	40.7	268	14.1	5	35.1	35.0	272	12.0	52	9.4	28.2	240		VIJAYWADA/ GANNAVARAM			
12.0	3	7.0	2.6	115	12.0	20	42.2	41.4	269	16.2	3	16.3	16.3	275		0530 hr.				10.5	7	17.4	17.2	250
14.1	1	5.5	5.5	345	14.1	11	38.0	37.5	268	18.0	1	20.5	20.5	285		1730 hr.				12.0	5	17.3	12.2	259
	1130 hr.				16.2	8	26.1	25.8	268	21.0	1	22.5	22.5	280		0530 hr.				10.5	7	17.4	17.2	250
10.5	12	11.5	5.7	189	18.0	8	16.5	16.1	265		1730 hr.*				14.1	4	26.2	26.0	278	12.0	4	10.7	10.7	258
12.0	10	12.5	6.6	228	21.0	4	21.0	16.2	258	10.5	14	38.0	36.2	270		0530 hr.				16.2	2	6.3	1.3	060
14.1	7	12.6	3.6	219	24.0	2	7.7	5.5	087	12.0	8	32.8	32.7	275		1730 hr.				18.0	1	5.0	5.0	030
16.2	2	7.7	7.3	291		POONA				14.1	4	26.2	26.0	278		0530 hr.				10.5	7	16.9	16.3	242
18.0	1	11.5	11.5	090		0530 hr.				16.2	2	14.7	14.7	269		1730 hr.				12.0	5	15.1	14.3	238
	1730 hr.*				10.5	2	8.3	2.5	191		TIRUCHCHIRA PPALLI				14.1	4	10.7	10.7	258		0530 hr.			
10.5	28	10.9	6.3	134		1730 hr.				10.5	2	7.5	3.7	212		1730 hr.				16.2	2	6.3	1.3	060
12.0	27	12.3	4.0	121	10.5	13	12.9	9.6	239	12.0	10	11.9	7.9	246		0530 hr.				18.0	1	5.0	5.0	030
14.1	25	12.8	1.3	144	12.0	10	11.9	7.9	246	10.5	2	4.7	3.3	185		1730 hr.				10.5	7	16.9	16.3	242
16.2	22	8.5	2.3	212	14.1	7	8.1	3.1	268	12.0	2	5.0	5.0	172		0530 hr.				12.0	5	15.1	14.3	238
18.0	20	6.8	2.1	242		0530 hr.				14.1	1	1.5	1.5	305		1730 hr.				14.1	1	13.0	13.0	265
21.0	15	12.2	11.2	272	16.2	2	7.3	3.5	283		1730 hr.					0530 hr.								
24.0	4	11.6	11.3	280	18.0	1	4.0	4.0	335		1730 hr.					0530 hr.								

RADIOSONDE DATA

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

During the month, observations of upper air temperature, pressure and humidity were made at 15 stations in India as given in the list below. For a detailed description of the instruments used, a reference may be made to the I. M. D. Scientific Notes Nos. 112 and 113 (Volume IX).

LIST OF RADIOSONDE STATIONS IN INDIA

Serial No.	Name of station	Type of instrument used	Date of starting	Hours of routine observations in G.M.T. during the month	Remark
1	Ahmadabad	Fan type	20th July, 1961	00 and 12	
2	Allahabad/Barnhaurli	Clock type	1st October, 1944	00 and 12	
3	Bangalore	Fan type	10th March, 1961	00 and 12	
4	Bombay/Santa Cruz	Clock type	7th September, 1954	00 and 12	
5	Calcutta/Dum Dum	Clock type	13th December, 1946	00 and 12	Fan type used from 13-12-46 to 30-11-47.
6	Gauhati	Clock type	22nd July, 1955	00 and 12	
7	Jodhpur	Clock type	17th April, 1946	00 and 12	
8	Madras/Minambakkam	Fan type	29th June, 1946	00 and 12	
9	Minicoy	Fan type	12th May 1963.	12	
10	Nagpur/Sonegaon	Fan type	1st October, 1946	00 and 12	
11	New Delhi/Safdarjung	Clock type	3rd December, 1943	00 and 12	
12	Port Blair	Fan type	4th December, 1949.	00 and 12	
13	Srinagar	Clock type.	1st August, 1962	00 and 12	
14	Trivandrum	Fan type	1st July, 1947	00 and 12	
15	Vishakhapatnam	Fan type	8th December, 1946	00 and 12	

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACES

(B) From Ascents at 12 Hours G. M. T.

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Standard Pressure Surface mb.	JODHPUR Surf. Pr. (989 mb.)						MADRAS/MINAMBAKKAM (1010 mb.)						MINICOY (1010 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	29	218	298.5	305	291	281.0	31	015	298.8	301	295	293.6	31	002	299.9	301	298	296.2
1000	28	122	..	..	..	..	31	105	..	..	..	..	31	092	..	..	..	..
900	28	1035	292.3	301	287	275.3	31	1022	292.6	295	289	287.0	31	1014	292.6	295	290	288.3
850	28	1522	288.7	295	283	272.2	31	1511	290.0	293	287	282.9	31	1505	290.0	293	287	284.3
800	28	2032	285.6	293	282	268.3	31	2028	288.2	291	283	277.4	31	2022	287.7	291	284	280.3
700	28	3138	279.7	285	276	263.4	31	3150	283.5	286	279	270.0	31	3140	281.7	285	279	274.2
600	28	4384	271.5	277	267	260.0	31	4418	276.3	279	269	263.9	31	4401	274.9	277	271	266.6
500	28	5809	262.3	268	256	..	31	5875	267.8	269	266	..	31	5851	267.2	271	261	..
400	26	7502	252.5	261	246	..	31	7589	256.8	259	253	..	31	7562	255.6	263	247	..
300	22	9588	239.3	248	233	..	31	9699	242.0	246	238	..	29	9655	240.4	248	233	..
250	19	10866	230.3	240	226	..	31	10966	231.8	237	227	..	28	10909	230.4	237	225	..
200	16	12334	221.6	231	217	..	31	12449	220.0	227	213	..	26	12374	218.6	228	213	..
175	12	13204	216.8	225	213	..	31	13287	213.8	219	208	..	25	13213	212.6	222	209	..
150	11	14140	210.3	214	205	..	30	14246	207.5	214	203	..	25	14167	206.1	216	199	..
125	9	15224	208.9	214	201	..	26	15320	201.2	204	195	..	24	15237	199.9	209	195	..
100	8	16578	204.6	212	196	..	23	16646	197.3	203	192	..	23	16559	197.9	207	193	..
80	8	17924	207.5	214	200	..	17	17935	201.4	208	197	..	23	17861	200.6	208	191	..
70	8	18790	209.1	218	202	..	15	18724	206.9	211	199	..	21	18658	203.0	212	193	..
60	5	19728	211.8	219	204	..	12	19662	206.9	216	200	..	21	19572	205.6	212	197	..
50	5	20857	214.8	223	205	..	12	20755	211.3	221	207	..	19	20672	209.8	217	201	..
40													10	22035	212.6	219	206	..
30													5	23771	213.4	218	210	..
20																		..
Standard Pressure Surface mb.	NAGPUR/SONEGAON (978 mb.)						NEW DELHI/SAFDARJUNG (991 mb.)						PORT BLAIR (1002 mb.)					
	No. of Obs.	Ht. gpm.	Mean	Max.	Min.	Dew point	No. of Obs.	Ht. gpm.	Mean	Max.	Min.	Dew point	No. of Obs.	Ht. gpm.	Mean	Max.	Min.	Dew point
Surface	31	311	299.0	303	294	282.3	31	209	293.0	297	289	282.1	31	079	296.9	301	297	295.5
1000	31	111	..	..	..	..	31	131	..	..	..	..	31	096	..	..	..	..
900	31	1034	293.5	299	288	279.5	31	1029	287.4	292	282	272.2	30	1014	292.8	295	289	290.8
850	31	1524	289.9	294	286	275.5	31	1510	285.5	290	282	266.4	30	1506	290.2	292	287	287.4
800	31	2038	287.2	291	283	272.0	31	2014	283.7	289	278	262.4	30	2022	287.8	291	285	282.4
700	31	3153	281.7	287	277	265.9	31	3117	277.7	284	281	259.0	30	3144	282.8	286	279	273.6
600	31	4411	274.5	278	270	257.5	30	4357	270.2	277	264	269.8	27	4409	276.1	279	274	263.8
500	31	5858	266.3	271	261	..	31	5775	260.3	267	255	..	26	5861	267.5	271	264	..
400	31	7560	254.2	259	248	..	31	7444	249.7	259	242	..	26	7579	256.6	261	251	..
300	31	9641	239.0	243	233	..	31	9498	236.9	246	228	..	23	9679	240.8	248	233	..
250	31	10897	229.5	236	223	..	31	10745	228.8	236	220	..	23	10938	230.5	237	223	..
200	31	12363	218.6	225	214	..	31	12212	220.4	228	213	..	19	12397	217.9	228	212	..
175	31	13206	212.7	220	204	..	30	13072	216.3	225	207	..	17	13254	212.9	223	206	..
150	31	14157	207.7	215	203	..	30	14041	212.8	221	204	..	15	14196	206.3	217	199	..
125	30	15263	202.7	209	195	..	29	15174	208.9	217	201	..	8	15300	202.6	210	197	..
100	29	16566	200.3	207	193	..	27	16530	205.3	214	197	..	5	16658	200.0	204	197	..
80	21	17937	202.3	208	198	..	25	17887	206.7	215	201	..						
70	18	18754	203.7	209	199	..	24	18699	208.7	217	203	..						
60	14	19673	206.5	210	201	..	23	19636	210.5	216	206	..						
50	11	20769	210.5	218	202	..	22	20767	214.1	221	210	..						
40	5	22139	214.6	220	208	..	15	22164	218.7	225	214	..						

RADIOSONDE DATA

TABLE VI—MEAN DYNAMIC HEIGHT, TEMPERATURE AND DEW POINT AT STANDARD PRESSURE SURFACE

(B) From Ascents at 12 Hours G. M. T.

December, 1963 (Agrahayana 10—Pausa 10, 1885 Saka)

Standard Pressure Surface mb.	SRINAGAR Surf. Pr.(846 mb.)						TRIVANDRUM Surf. Pr. (1002 mb.)						VISHAKHAPATNAM Surf. Pr. (1008 mb.)					
	No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature °A				No. of Obs.	Ht. gpm.	Temperature			
			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point			Mean	Max.	Min.	Dew point
Surface	27	1588	279.0	290	272	273.7	31	064	301.5	303	299	296.2	31	041	299.1	301	297	292.0
1000	27	203	..	..	..	..	31	081	..	..	..	..	31	101	..	..	..	..
900	27	1084	..	..	..	..	31	1008	294.0	296	291	290.3	31	1031	291.9	295	288	284.0
850	27	1555	..	..	..	..	31	1502	290.9	295	289	286.3	31	1521	289.5	293	286	280.8
800	27	2048	274.4	289	266	270.4	31	2019	288.3	292	286	283.5	31	2035	287.0	291	284	275.6
700	27	3114	271.3	279	265	..	31	3141	282.7	286	279	276.3	31	3154	282.3	286	279	264.9
600	27	4331	265.1	273	258	..	31	4405	275.7	279	273	270.2	31	4419	275.8	279	272	258.9
500	27	5721	255.4	262	247	..	31	5858	267.3	273	263	..	31	5873	266.5	270	264	..
400	27	7356	243.6	250	236	..	31	7595	256.6	261	252	..	31	7586	255.9	261	251	..
300	20	9362	231.6	240	221	..	31	9679	241.3	245	237	..	29	9690	241.3	246	236	..
250	17	10567	224.2	236	218	..	31	10943	231.3	236	224	..	27	10953	231.5	237	226	..
200	15	12008	218.1	225	208	..	29	12422	219.7	227	213	..	26	12435	220.4	226	213	..
175	15	12857	215.8	220	210	..	29	13253	213.4	220	207	..	26	13283	214.7	220	205	..
150	13	13842	213.7	221	202	..	29	14221	206.3	214	199	..	26	14251	208.6	214	195	..
125	11	14970	211.6	217	202	..	26	15299	201.4	206	194	..	23	15322	202.3	207	190	..
100	9	16363	210.3	219	195	..	25	16662	197.0	202	192	..	22	16659	197.2	207	188	..
80	5	17791	210.4	216	197	..	21	17927	201.9	209	193	..	15	17975	199.1	205	193	..
70						..	20	18728	204.8	213	197	..	11	18775	201.0	208	196	..
60						..	17	19665	208.0	216	200	..	10	19714	204.5	210	197	..
50						..	17	20783	211.2	217	202	..	9	20789	207.5	213	199	..
40						..	12	22172	214.1	219	205	..	6	22110	208.5	212	202	..
30						..	6	23826	215.8	222	208	..	5	23924	214.2	217	206	..

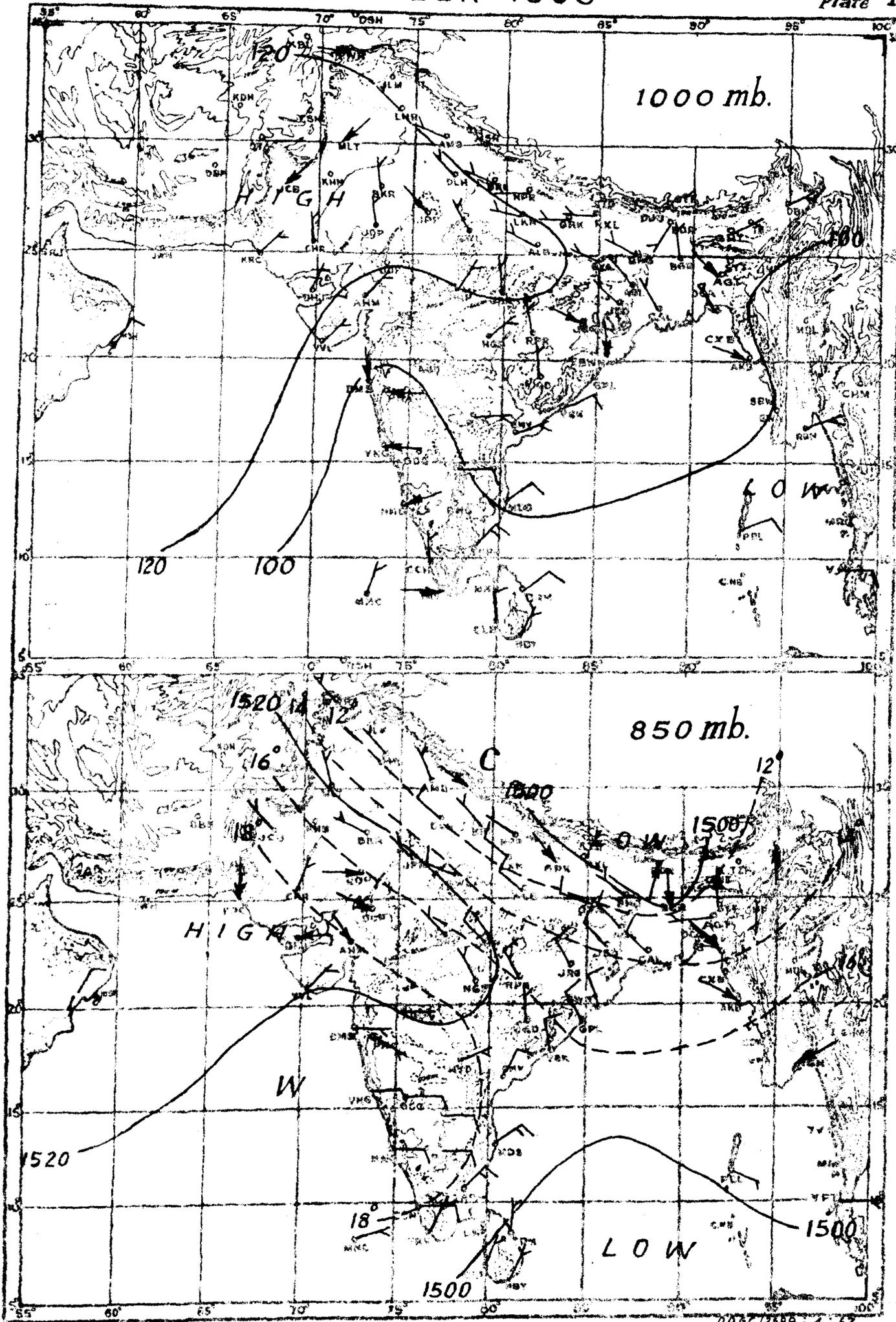
NOTE: Number of observation refer to those of dynamic height. Means are not worked out for temperature and dew point for the 1000 mb. surface and for dew point for standard pressure surfaces with temperature less than 273° A.
Means are not worked out for less than five observations at standard pressure surfaces.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

DECEMBER 1963

I.Met.D.

Plate I



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

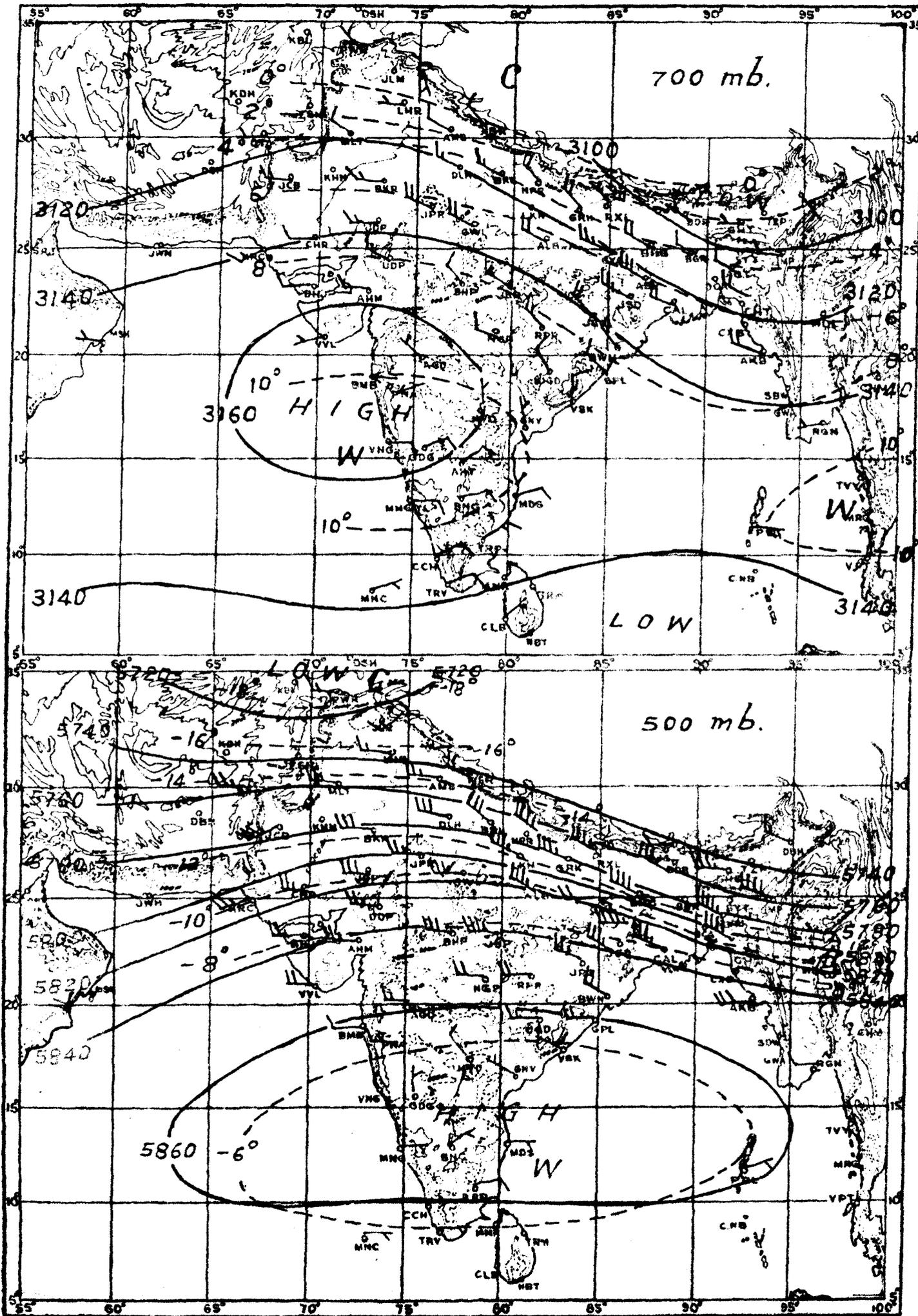
----- Isotherms in degrees centigrade ———— Contours in geopotential metres.

MONTHLY MEAN CONSTANT PRESSURE CHARTS

I Met.D.

DECEMBER 1963

Plate II



RESULTANT WIND — 5 Knots, — 10 Knots, — 50 Knots.

----- Isotherms in degrees centigrade ———— Contours in geopotential metres.